EXHIBIT A

JSB

CDM

One Cambridge Place 50 Hampshire Street
Cambridge Massachusetts 02139
tel: 617 452-6000
fax: 617 452-8000

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FEB 09 2004
YOUNG, SOMMER . . . LLC

February 6, 2004

Mr. John Holbrook
Business Development
Alstom Power, Inc.
Environmental control Systems
1409 Centerpoint Blvd.
Knoxville, TN 37932-1962

Subject: Alstom's Proposed SCR System for St. Lawrence Cement

Dear Mr. Holbrook:

As I explained in our telephone conversation, CDM is an environmental consulting firm providing environmental assessments of St. Lawrence Cement's proposed cement plant in Greenport, NY. One of our assignments is to assess whether or not the air pollution control (APC) systems for the proposed cement plant meet present day APC laws and regulations. Since the project is located in the Northeast Ozone Transport Region, nitrogen oxide (NOx) and volatile organic compounds (VOCs) are subject to Lowest Achievable Emission Rate (LAER) control technology. Therefore, we are most interested in the feasibility of applying selective catalytic reduction (SCR) control to the proposed cement plant.

We have reviewed St. Lawrence's SCR Bid Specification, Alstom's SCR proposal dated 9/19/03, St. Lawrence's letter of 10/14/03 and Alstom's response letter of 10/20/03. There seems to be some misunderstanding of St. Lawrence's interpretation of Alstom's 10/20/03 response. Also there is some question as to the practicality and reasonableness of some of the performance standards which St. Lawrence Cement has required in their Bid Specification. Therefore, to clarify Alstom's offer to supply an SCR system for the proposed cement plant in Greenport, could you please answer the following questions.

1. Can Alstom guarantee that their proposed SCR system for St. Lawrence Cement will meet the following performance guarantees as stated in the attached Appendix? Note that we have changed the performance standards in the original Bid Specification to reflect what is typically provided in a performance guarantee by an SCR system supplier. If there are any performance guarantees which you would have to take exception to, please indicate these. Assume that the Application Description/Design Basis as stated in Section 2.0 of the Bid Specification are unchanged.

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2 One of the problems with applying SCR to this project is the temperature of the preheater tower exhaust gas, minimum of 300°C (572° F), which is slightly lower than the desired minimum inlet temperature of 315°C (600° F) to 325°C (617° F). One of the possible solutions to this problem is to install a bypass duct around the last preheater cyclone. See attached Figure 1 showing kiln, preheater cyclones, proposed cyclone bypass duct and nominal design temperatures through the process. Assuming that the preheater tower exhaust temperature from the last preheater tower is at the minimum 572° F and its temperature needs to be raised to 617° F, only 5% of the 932° F gas stream going into the last cyclone would have to be bypassed to achieve the desired 617° F going into the SCR system. Note that similar types of economizer bypasses are commonly used on utility boiler SCR systems. Does this sound like a reasonable way to address the temperature problem? Do you see any technical flaws in it? Assuming such a cyclone bypass duct could be installed on the proposed cement plant, could Alstom agree to providing the performance guarantees stated above?

3. Lastly, we are most interested in hearing about the SCR testing being done by Italcementi (Broni and Caluso plants). Do you or your catalyst supplier have any data from this project which you can share with us. We would like to know about: sulfur and SO2 concentrations in the limestone and preheater exhaust gas, concentrations of alkalis (Na, K) and other detrimental elements (arsenic, lead, phosphorus) in the raw feed and the preheater exhaust gas, SO_2 oxidation levels, any formation of $CaSO_4$, any plugging or fouling problems, NO_2 reduction, NH_3 slip levels, fuel used, type of catalyst, temperatures at inlet and outlet of SCR system, type of soot blowers and frequency used, dust loading to the SCR system and composition of the dust.

We greatly appreciate your assistance on this important project. If you have any questions or concerns, please do not hesitate to call me at 617-452-6239. If you could respond to us by February 20, 2004 that would be most appreciated. Thank you.

Very truly yours,

Frank Sapienza

Frank Sapienza
Principle Engineer
Camp Dresser & McKee Inc.

APPENDIX
Performance Guarantees for SCR System

1. NOx Reduction Efficiency

The SCR system shall achieve a minimum of 85% NOx reduction efficiency when the proposed cement manufacturing plant (specifically the kiln, precalciner and preheater) is operating at stable, continuous conditions. Stable continuous conditions are defined as operation of the plant such that the preheater tower exit gas flow rate, temperature and composition are as defined below (i.e. between the following minimum and maximum valves):

	Minimum	Maximum
Flow rate in actual m^3/hr	600,000	950,000
Temperature in degrees C.	300.	400.

All other preheater tower exit gas characteristics and composition shall be between the limits indicated in Table 2-2 and 2-3 (as reissued on 9/5/04) and Table 2-4 of the Greenport Project SCR Bid Specification. The above NOx reduction efficiency shall be maintained for the life of the catalyst. The life of the catalyst is defined in Item 6 below.

2. NH_3 Slip

The NH3 slip from the SCR reactor shall not exceed 2 ppmvd at 3% oxygen when the cement manufacturing plant is operating at stable, continuous conditions. The ammonia slip emission limit must be maintained for the life of the catalyst which is defined in Item 6 below.

3. SO_2 Oxidation

The fraction of SO_2 that is oxidized to form SO_3 in the SCR reactor shall not exceed 1.0 mole % while the cement manufacturing plant is operating at stable, continuous conditions. The SO_2 oxidation limit must be maintained for the life of the catalyst which is defined in Item 6 below

4. Gas-Side Pressure Loss Requirements

The flange-to-flange gas side pressure loss across the SCR system shall not exceed 6 inches water column when the cement manufacturing plant is operating at stable, continuous conditions. The gas side pressure loss must be maintained for the life of the catalyst which is defined in Item 6 below.

5. Turndown Requirements

The SCR system must be capable of maintaining all performance requirements listed in this Appendix when the preheater tower exit gas has a flow, temperature and characteristics within the ranges defined in Item 1 above.

6. Catalyst Life

The average catalyst life shall be a minimum of 24,000 hours of operating time. Operating time includes only that time during which NH_3 is injected into the preheater tower exhaust gas upstream of the SCR reactor. Average catalyst life refers to the average length of time catalyst is installed in the reactor before it is removed and replaced.

7. SCR Availability Requirement

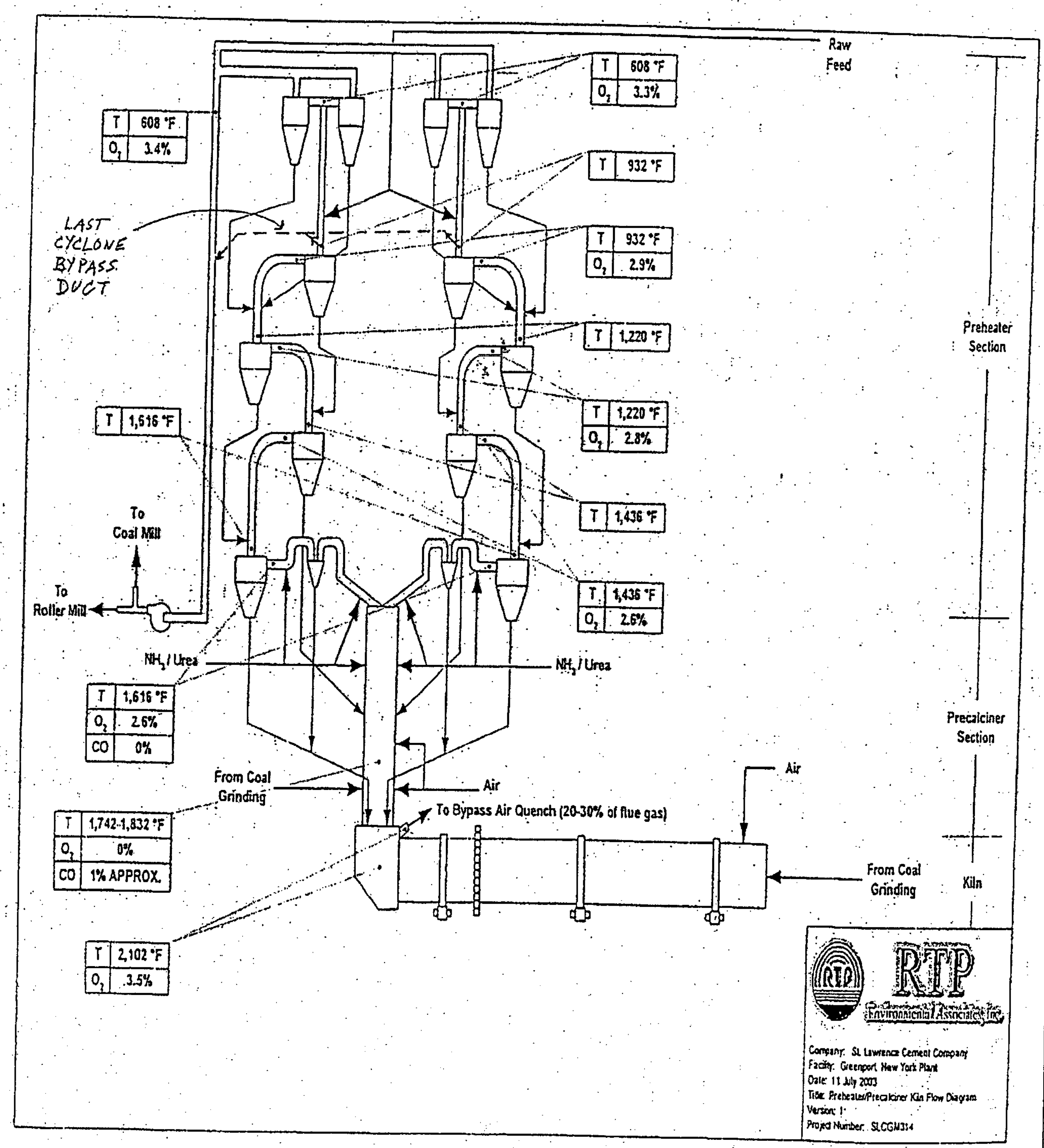
The SCR system shall be available at least 98%of the time that the cement manufacturing plant is operated at stable, continuous conditions, and also provided that the SCR system is maintained and operated in accordance with the procedures and instructions stated in the SCR supplier's Operations and Maintenance Manuals.

8. Failure to Meet Performance Guarantees

If the SCR system fails to meet the NO_x reduction efficiency (85%) as stated in Item 1 or the NH_3 slip limit stated in Item 2, then the SCR system supplier shall correct the failure by repair, modification or replacement of the SCR equipment, whole or in part. If, after a reasonable period in which the SCR supplier attempts to correct the deficiencies, the SCR system still fails to meet the above NO_x reduction and NH_3 slip guarantees, then the SCR supplier shall pay the Purchaser liquidated damages. The amount of liquidated damages shall be determined by the supplier and Purchaser and shall be based on the cost to the Purchaser of excess NO_x emissions released to the atmosphere.

Test method procedures for determining NO_X, NH_3, SO_2 and SO_3 concentrations shall be as stated in the Greenport Project SCR Bid Specification.

Figure 1
Schematic of Greenport Preheater/Precalciner Section Showing Nominal Temperatures



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CDM

One Cambridge Place 50 Hampshire Street
Cambridge Massachusetts 02139
tel: 617 452-6000
fax: 617 452-8000

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YOUNG, SOMMER . . . LLC

February 11, 2004

Mr. Thomas W. Lugar
Chief Executive Officer
KWH Catalysts, Inc.
435 Devon Park Drive
400 Building
Wayne, PA 19087

Subject: SCR System for St. Lawrence Cement

Dear Mr. Lugar:

As I explained in our telephone conversations, CDM is an environmental consulting firm providing environmental assessments of St. Lawrence Cement's proposed cement plant in Greenport, NY. One of our assignments is to assess whether or not the air pollution control (APC) systems for the proposed cement plant meet present day APC laws and regulations. Since the project is located in the Northeast Ozone Transport Region, nitrogen oxide (NOx) and volatile organic compounds (VOCs) are subject to Lowest Achievable Emission Rate (LAER) control technology. Therefore, we are most interested in the feasibility of applying selective catalytic reduction (SCR) control to the proposed cement plant.

We have reviewed St. Lawrence's SCR Bid Specification, KWH's SCR proposal dated 9/19/03, St. Lawrence's letter of 9/30/03 and KWH's response letter of 10/3/03. We believe there is some question as to the practicality and reasonableness of some of the performance standards which St. Lawrence Cement has required in their Bid Specification. Therefore, to clarify KWH's offer to supply an SCR system for the proposed cement plant in Greenport, could you please answer the following questions.

1. Can KWH Catalysts guarantee that your proposed SCR system for St. Lawrence Cement will meet the performance guarantees as stated in Appendix 1? Note that we have changed the performance standards in the original Bid Specification to reflect what is typically provided in a performance guarantee by an SCR system supplier. If there are any performance guarantees which you would have to take exception to, please indicate these. Assume that the Application Description/Design Basis as stated in Section 2.0 of the Bid Specification are unchanged. These data are included in attached Appendix 2.

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2. One of the problems with applying SCR to this project is the temperature of the preheater tower exhaust gas, minimum of 300°C (572° F), which is slightly lower than the desired minimum inlet temperature of 315°C (600° F) to 325°C (617° F). One of the possible solutions to this problem is to install a bypass duct around the last preheater cyclone. See attached Figure 1 showing kiln, preheater cyclones, proposed cyclone bypass duct and nominal design temperatures through the process. Assuming that the preheater tower exhaust temperature from the last preheater tower is at the minimum 572° F and its temperature needs to be raised to 617° F, only 5% of the 932° F gas stream going into the last cyclone would have to be bypassed to achieve the desired 617° F going into the SCR system. Note that similar types of economizer bypasses are commonly used on utility boiler SCR systems. Does this sound like a reasonable way to address the temperature problem? Do you see any technical flaws in it? Assuming such a cyclone bypass duct could be installed on the proposed cement plant, could KWH Catalysts agree to providing the performance guarantees stated above?

3. Lastly, we are most interested in hearing about the SCR testing and experience at other plants, particularly the Solnhofen plant. Is there any recent data from this plant which you can share with us. We would like to know about: sulfur and SO2 concentrations in the limestone and preheater exhaust gas, concentrations of alkalis (Na, K) and other detrimental elements (arsenic, lead, phosphorus) in the raw feed and the preheater exhaust gas, SO_2 oxidation levels, any formation of $CaSO_4$, any plugging or fouling problems, NO_2 reduction, NH_3 slip levels, type of catalyst, temperatures at inlet and outlet of SCR system, type of soot blowers and frequency used, dust loading to the SCR system and composition of the dust.

We greatly appreciate your assistance on this important project. If you have any questions or concerns, please do not hesitate to call me at 617-452-6239. If you could respond to us by February 25, 2004 that would be most appreciated. Thank you.

Very truly yours,

Frank Sapienza

Frank Sapienza
Principle Engineer
Camp Dresser & McKee Inc.

APPENDIX 1
Performance Guarantees for SCR System

1. NOx Reduction Efficiency

The SCR system shall achieve a minimum of 85% NOx reduction efficiency when the proposed cement manufacturing plant (specifically the kiln, precalciner and preheater) is operating at stable, continuous conditions. Stable continuous conditions are defined as operation of the plant such that the preheater tower exit gas flow rate, temperature and composition are as defined below (i.e. between the following minimum and maximum valves):

	Minimum	Maximum
Flow rate in actual m^3/hr	600,000	950,000
Temperature in degrees C.	300.	400.

All other preheater tower exit gas characteristics and composition shall be between the limits indicated in Table 2-2 and 2-3 (as reissued on 9/5/04) and Table 2-4 of the Greenport Project SCR Bid Specification. These tables are included in Appendix 2. The above NOx reduction efficiency shall be maintained for the life of the catalyst. The life of the catalyst is defined in Item 6 below.

2. NH_3 Slip

The NH3 slip from the SCR reactor shall not exceed 2 ppmvd at 3% oxygen when the cement manufacturing plant is operating at stable, continuous conditions. The ammonia slip emission limit must be maintained for the life of the catalyst which is defined in Item 6 below.

3. SO_2 Oxidation

The fraction of SO_2 that is oxidized to form SO_3 in the SCR reactor shall not exceed 1.0 mole % while the cement manufacturing plant is operating at stable, continuous conditions. The SO_2 oxidation limit must be maintained for the life of the catalyst which is defined in Item 6 below.

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The flange-to-flange gas side pressure loss across the SCR system shall not exceed 6 inches water column when the cement manufacturing plant is operating at stable, continuous conditions. The gas side pressure loss must be maintained for the life of the catalyst which is defined in Item 6 below.

5. Turndown Requirements

The SCR system must be capable of maintaining all performance requirements listed in this Appendix when the preheater tower exit gas has a flow, temperature and characteristics within the ranges defined in Item 1 above.

6. Catalyst Life

The average catalyst life shall be a minimum of 24,000 hours of operating time. Operating time includes only that time during which NH_3 is injected into the preheater tower exhaust gas upstream of the SCR reactor. Average catalyst life refers to the average length of time catalyst is installed in the reactor before it is removed and replaced.

7. SCR Availability Requirement

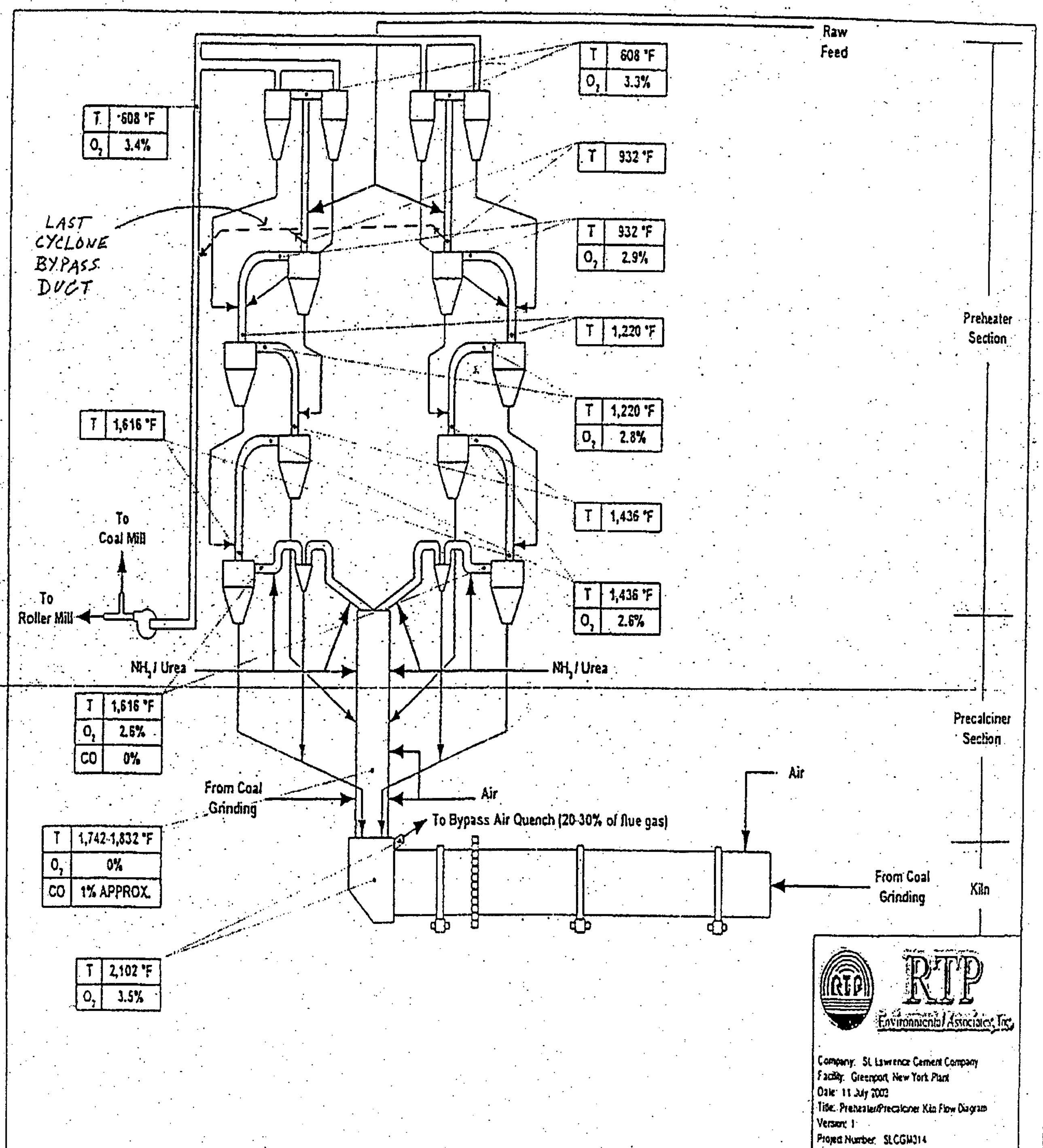
The SCR system shall be available at least 98% of the time that the cement manufacturing plant is operated at stable, continuous conditions, and also provided that the SCR system is maintained and operated in accordance with the procedures and instructions stated in the SCR supplier's Operations and Maintenance Manuals.

8. Failure to Meet Performance Guarantees

If the SCR system fails to meet the NO_x reduction efficiency (85%) as stated in Item 1 or the NH_3 slip limit stated in Item 2, then the SCR system supplier shall correct the failure by repair, modification or replacement of the SCR equipment, whole or in part. If, after a reasonable period in which the SCR supplier attempts to correct the deficiencies, the SCR system still fails to meet the above NO_x reduction and NH_3 slip guarantees, then the SCR supplier shall pay the Purchaser liquidated damages. The amount of liquidated damages shall be determined by the supplier and Purchaser and shall be based on the cost to the Purchaser of excess NO_x emissions released to the atmosphere.

Test method procedures for determining NO_X, NH_3, SO_2 and SO_3 concentrations shall be as stated in the Greenport Project SCR Bid Specification.

Figure 1
Schematic of Greenport Preheater/Precalciner Section Showing Nominal Temperatures



APPENDIX 2

CEMENT MANUFACTURING PLANT - PROCESS DATA

Fuel Type and Composition

The kiln pyroprocessing system will be fired primarily with coal but up to 20 % of total fuel may be chemical petroleum coke. No. 2 oil and natural gas will be used for kiln startup. On average, the spilt of fuel delivered to the pyroprocessing area would be 60% to the precalciner and 40 % to the kiln. Some minor variations of the fuel allocation between these two locations will occur to adjust for variations in raw mix and fuel quality. The typical fuel firing rate is estimated to be about 800 MMBtu/hr. Table 2-1 lists some properties of the fuels that may be fired in the pyroprocessing area.

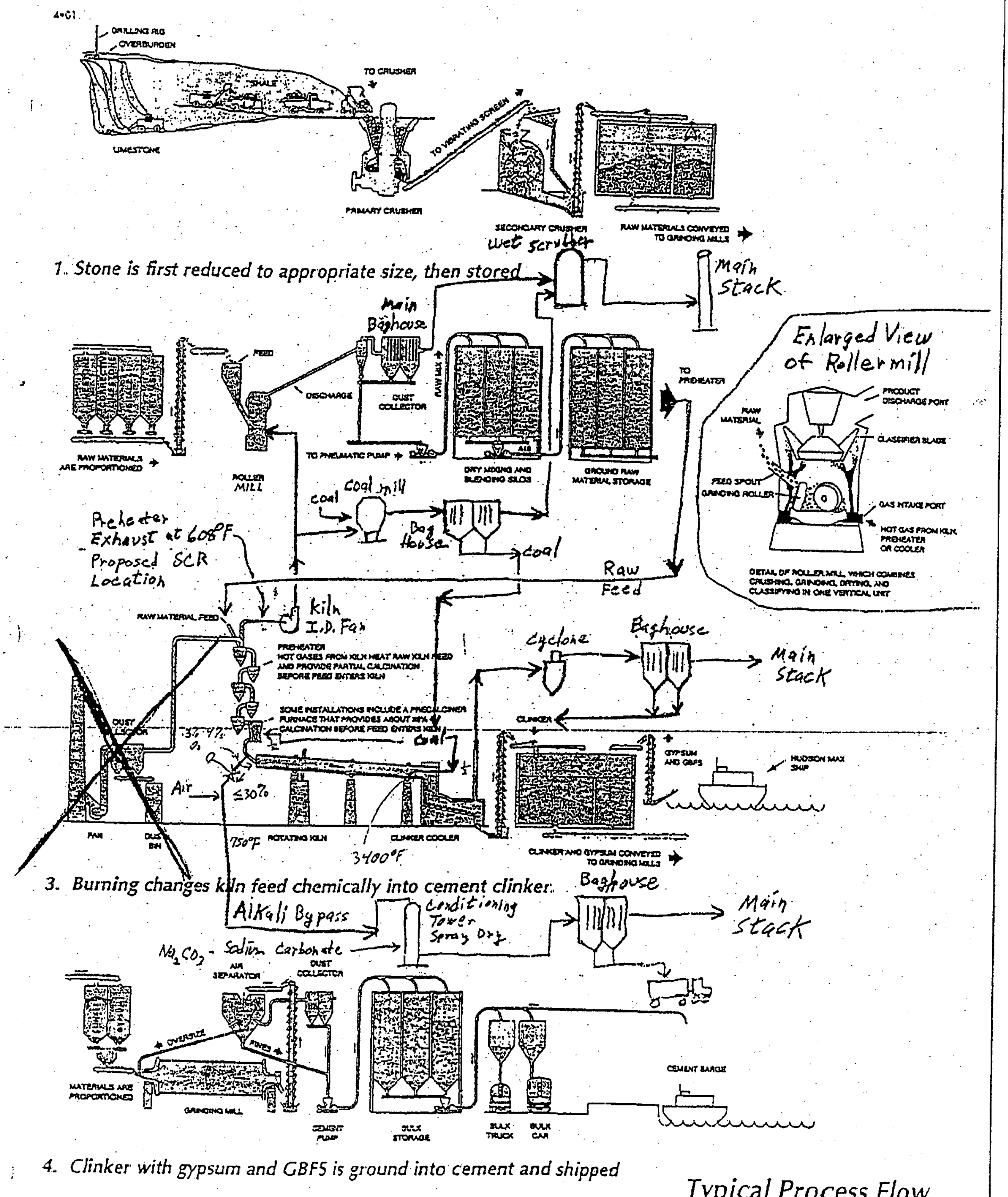
Table 2-1. Typical Fuel Characteristics

Parameter	Coal	Pet coke
HHV, Btu/lb	11,000 – 13,000	12,500 – 14,500
wt. % Moisture	1 - 8	7 - 13
wt. % Volatile Matter	25 - 35	8.5 – 16.5
wt. % ash	5 - 10	1 - 2
wt. % fix carbon	55 - 65	65 - 75
wt. % Sulfur	0.5 – 2.5	3 - 6
wt. % Chlorine	0.1 – 0.3	NA*

* NA – data are not available

Raw Materials

As discussed in this Specification, the primary raw material used in the cement manufacturing process is limestone. Some of the additional raw materials that will be added to the process include shale, iron ore, bauxite, fly ash, and coal ash.



Typical Process Flow

SOURCE: PORTLAND CEMENT ASSOCIATION

2

Temperature, Pressure, and Flow Characteristics

Table 2-2 presents the expected temperature, pressure, and flow characteristics of the preheater tower exhaust gas stream. Note that these values are for bid purposes only, and actual values could differ.

Table 2-2. Anticipated Gas Characteristics in Preheater Downcomer

Parameter		Value	Notes
Gas flow rate at	Nm^3/hour (typical)	381,000	3.6% O_2, @ 0°C, 5.8 % H_2O,1 atm
SCR inlet	Nm^3/hour (max)	419,000	5.6% O_2 @ 0°C, 5.3% H_2O, 1 atm
	m^3/hour (typical)	828,000	3.6 %O_2 @ 320 °C, 5.8% H_2O
	m^3/hour (max)	910,000	5.6%, O_2 @ 320°C, 5.3% H_2O
Gas temperature at SCR inlet	Typical	320°C	SCR bypass to be used when inlet temp is < 300°C and >400°C or as specified by VENDOR
	Max Temperature Rate of Change	100 °C/minute	Maximum ramp rate will occur when preheater meal feed is lost or disrupted. Normally this will result in a kiln shutdown, but there may be several minutes of excessive temperatures before shutdown occurs.
Gas pressure at SCR inlet	Typical	-60 mBar.	
	Minimum	-80 mBar	

3

Gas-Phase Compositions and Ranges

Table 2-3 presents gas-phase composition data for the preheater tower exhaust gas stream. Note that these values are based on design and anticipated operation, and actual values could differ

Table 2-3.. Anticipated Gas Stream Composition Preheater Downcomer

Parameter		Value	Notes
Particulate matter	Typical	60 grams/Nm^3	
loading at SCR inlet	Maximum	100 grams/Nm^3	
Particulate matter size distribution	Typical	Unknown	No data are available on the dust size distribution at this location in the process.
SO_2	Typical(daily average)	600 ppmv	@ 3.6% O_2
	Maximum(daily average)	750 ppmv	@ 3.6% O_2
SO_3	Typical(daily average)	5 ppmv	@ 3.6% O_2
	Maximum(daily average)	7 ppmv	@ 3.6% O_2
NOx	Typical (daily avg.)	600 ppmv	@ 3.6% O_2
	Maximum (daily avg.)	1400 ppmv	@ 3.6 % O_2
	Maximum Rate of change	33 ppmv/sec	Rapid variation in NOx concentration will be routine
CO	Typical(daily average)	720 ppmv	@ 3.6% O_2
	Maximum (daily average)	1500 ppmv	@ 3.6% O_2
O_2	Typical	3.6 vol. %	Even higher O_2 levels can occur during malfunction conditions.
	Maximum	~6 vol. %	
CO_2	Typical	30 vol. %	@ 3.6% O_2
H_2O	Typical	~6.0 vol. %	@ 3.6% O_2
Process Generated NH_3	Typical	20 ppmv	@ 3.6% O_2
	Maximum	30 ppmv	@ 3.6% O_2
	Minimum	10 ppmv	@ 3.6% O_2
Hydrocarbons (THC)	Typical	25 ppmv as C_3H_8	@ 3.6% O_2
	Maximum	36 ppmv as C_3H_8	@ 3.6% O_2

4

Entrained Dust Composition

Table 2-4 presents composition data for the entrained dust in the preheater tower exhaust gas stream. Note that these values are based on design and anticipated operation, and actual values could differ. Note also that this entrained dust may be "sticky" under the operating conditions of the preheater tower exhaust stream. See http://www robinsonfans.com/protect/cement.htm for additional details.

Table 2-4. Particulate Matter Composition

Compound		Value	Notes
CaO	Typical	26 grams/Nm^3	Value is $CaO + CaCO_3$. CaO levels should be assumed to be high.
	Maximum	45 grams/Nm^3	
K_2O	Typical	0.55 grams/Nm^3	
	Maximum	0.61 grams/Nm^3	
Na_2O	Typical	0.20 grams/Nm^3	
	Maximum	0.22 grams/Nm^3	
Cr_2O_3	Typical	0.00087 grams/Nm^3	
	Maximum	0.00130 grams/Nm^3	
PbO	Typical	0.00081 grams/Nm^3	
	Maximum	0.00110 grams/Nm^3	
As_2O_3 (gas)	Typical	0.0034 grams/Nm^3	
	Maximum	0.0047 grams/Nm^3	
SiO_2	Typical	8.4 grams/Nm^3	
	Maximum	14.1 grams/Nm^3	
Al_2O_3	Typical	2.0 grams/Nm^3	
	Maximum	3.5 grams/Nm^3	
Fe_2O_3	Typical	1.5 grams/Nm^3	
	Maximum	2.7 grams/Nm^3	
TiO_2	Typical	0.11 grams/Nm^3	
	Maximum	0.19 grams/Nm^3	
MgO	Typical	0.50 grams/Nm^3	
	Maximum	0.86 grams/Nm^3	
P_2O_5	Typical	0.06 grams/Nm^3	
	Maximum	0.11 grams/Nm^3	
V_2O_5	Typical	0.0012 grams/Nm^3	
	Maximum	0.0017 grams/Nm^3	

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J S/B

CDM

One Cambridge Place. 50 Hampshire Street
Cambridge. Massachusetts 02139
tel: 617 452-6000
fax: 617 452-8000

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YOUNG, SOMMER . . . LLC

February 10, 2004

Mr. Howard Franklin
Manager, SCR Development
Hitachi America, Ltd.
Power and Industrial Division
50 Prospect Avenue
Tarrytown, NY 10591

Subject: Proposed SCR System for St. Lawrence Cement

Dear Mr. Franklin:

As I explained in our telephone conversation, CDM is an environmental consulting firm providing environmental assessments of St. Lawrence Cement's proposed cement plant in Greenport, NY. One of our assignments is to assess whether or not the air pollution control (APC) systems for the proposed cement plant meet present day APC laws and regulations. Since the project is located in the Northeast Ozone Transport Region, nitrogen oxide (NOx) and volatile organic compounds (VOCs) are subject to Lowest Achievable Emission Rate (LAER) control technology. Therefore, we are most interested in the feasibility of applying selective catalytic reduction (SCR) control to the proposed cement plant.

We have developed a list of SCR system performance guarantees which are contained in Appendix 1. Appendix 2 contains process data on the proposed cement plant in Greenport, NY. To assist us in evaluating the suitability of applying SCR technology to the proposed cement plant, could you please answer the following questions.

1. Can Hitachi America guarantee that their SCR system if installed on the proposed St. Lawrence Cement plant in Greenport, NY will meet the performance guarantees stated in Appendix 1? If there are any performance guarantees which you would have to take exception to, please indicate these. Process data on the proposed cement plant is included in Appendix 2, Cement Manufacturing Plant – Process Data.

2. One of the problems with applying SCR to this project is the temperature of the preheater tower exhaust gas, minimum of 300°C (572° F), which is slightly lower than the desired minimum inlet temperature of 315°C (600° F) to 325°C (617° F). One of the possible solutions to this problem is to install a bypass duct around the last preheater cyclone. See attached Figure 1 showing kiln, preheater cyclones, proposed cyclone

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bypass duct and nominal design temperatures through the process. Assuming that the preheater tower exhaust temperature from the last preheater tower is at the minimum 572⁰ F and its temperature needs to be raised to 617⁰ F, only 5% of the 932⁰ F gas stream going into the last cyclone would have to be bypassed to achieve the desired 617⁰ F going into the SCR system Note that similar types of economizer bypasses are commonly used on utility boiler SCR systems. Does this sound like a reasonable way to address the temperature problem? Do you see any technical flaws in it? Assuming such a cyclone bypass duct could be installed on the proposed cement plant, could Hitachi America agree to providing the performance guarantees stated above?

3. Lastly, we are most interested in hearing about SCR testing and experience at other plants, particularly those firing high dust, high sulfur fuels such as Powder River Basin (PRB) coal. I found the following article on your website, "*Recent Experience with SCR Catalyst for PRB Fuels, High Sulfur Fuels, and Low Dust Applications*" which was most helpful. Is there any more recent plant data particularly on the PRB Coal Plant owned by Kansas City Power and Light (Hawthorn 5)? Has there been any masking or fouling due to formation of $CaSO_4$? Has $CaSO_4$ deactivated the catalyst and reduced its life? Also the article listed the $DeNO_x$ Efficiency at 55.6%. Has this been improved? Any other related data would be helpful.

We greatly appreciate your assistance on this important project. If you have any questions or concerns, please do not hesitate to call me at 617-452-6239. If you could respond to us by February 24, 2004 that would be most appreciated. Thank you.

Very truly yours,

Frank Sapienza

Frank Sapienza
Principle Engineer
Camp Dresser & McKee Inc.

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Mr. Howard Franklin
February 10, 2004
Page 3

APPENDIX 1
Performance Guarantees for SCR System

1. NOx Reduction Efficiency

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	Minimum	Maximum
Flow rate in actual m^3/hr	600,000	950,000
Temperature in degrees C.	300.	400.

All other preheater tower exit gas characteristics and composition shall be between the limits indicated in Table 2-2, 2-3 and 2-4 of Appendix 2. The above NOx reduction efficiency shall be maintained for the life of the catalyst. The life of the catalyst is defined in Item 6 below.

2. NH_3 Slip

The NH3 slip from the SCR reactor shall not exceed 2 ppmvd at 3% oxygen when the cement manufacturing plant is operating at stable, continuous conditions. The ammonia slip emission limit must be maintained for the life of the catalyst which is defined in Item 6 below.

3. SO_2 Oxidation

The fraction of SO_2 that is oxidized to form SO_3 in the SCR reactor shall not exceed 1.0 mole % while the cement manufacturing plant is operating at stable, continuous conditions. The SO_2 oxidation limit must be maintained for the life of the catalyst which is defined in Item 6 below.

4. Gas-Side Pressure Loss Requirements

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6. Catalyst Life

The average catalyst life shall be a minimum of 24,000 hours of operating time. Operating time includes only that time during which NH_3 is injected into the preheater tower exhaust gas upstream of the SCR reactor. Average catalyst life refers to the average length of time catalyst is installed in the reactor before it is removed and replaced.

7. SCR Availability Requirement

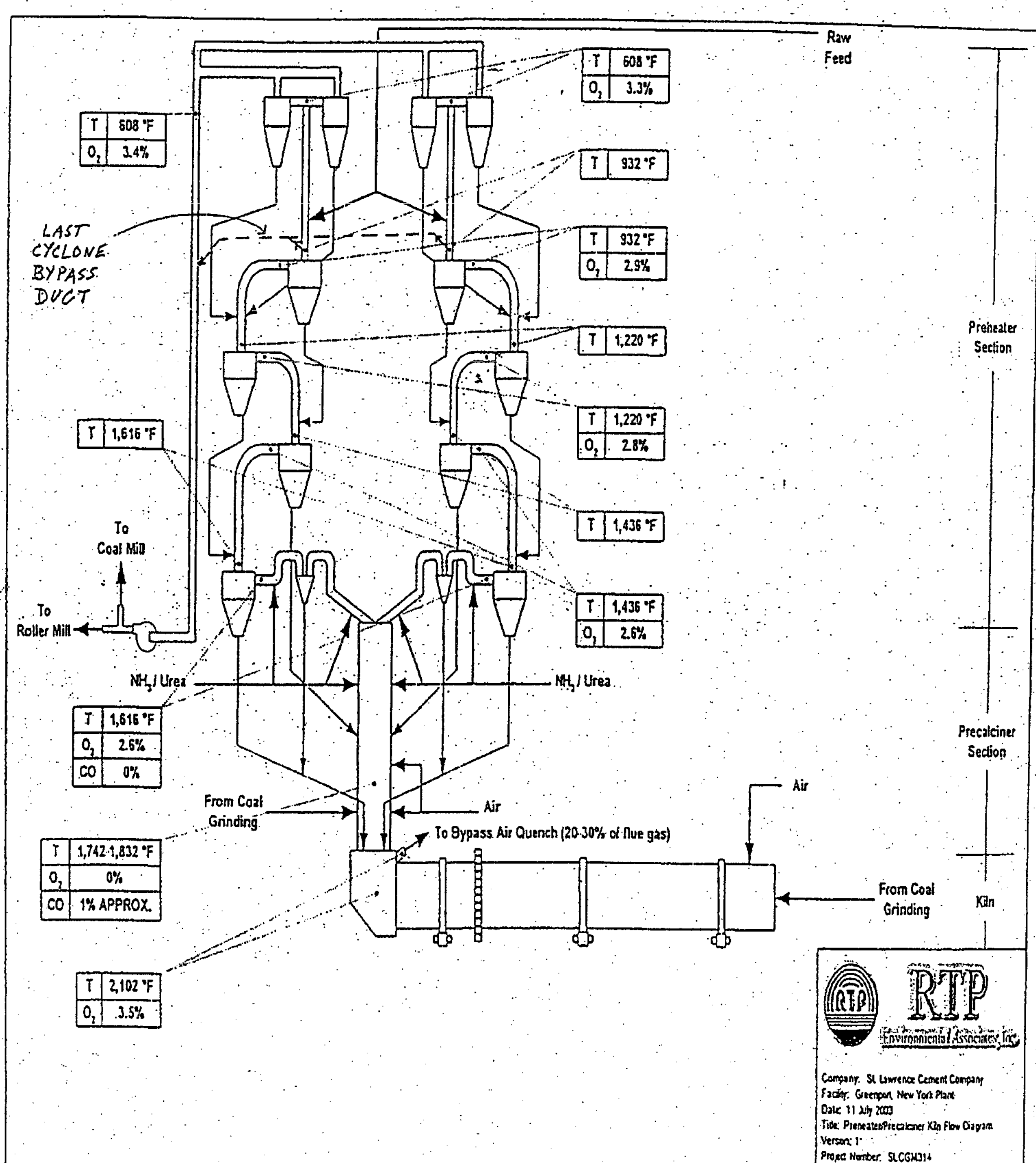
The SCR system shall be available at least 98%of the time that the cement manufacturing plant is operated at stable, continuous conditions, and also provided that the SCR system is maintained and operated in accordance with the procedures and instructions stated in the SCR supplier's Operations and Maintenance Manuals.

8. Failure to Meet Performance Guarantees

If the SCR system fails to meet the NO_x reduction efficiency (85%) as stated in Item 1 or the NH_3 slip limit stated in Item 2, then the SCR system supplier shall correct the failure by repair, modification or replacement of the SCR equipment, whole or in part. If, after a reasonable period in which the SCR supplier attempts to correct the deficiencies, the SCR system still fails to meet the above NO_x reduction and NH_3 slip guarantees, then the SCR supplier shall pay the Purchaser liquidated damages. The amount of liquidated damages shall be determined by the supplier and Purchaser and shall be based on the cost to the Purchaser of excess NO_x emissions released to the atmosphere.

Test method procedures for determining NO_x, NH_3, SO_2 and SO_3 concentrations shall be US EPA Test Methods (40 CFR 60 Appendix A).

Figure 1
Schematic of Greenport Preheater/Precalciner Section Showing Nominal Temperatures



APPENDIX 2

CEMENT MANUFACTURING PLANT - PROCESS DATA

Fuel Type and Composition

The kiln pyroprocessing system will be fired primarily with coal but up to 20 % of total fuel may be chemical petroleum coke. No. 2 oil and natural gas will be used for kiln startup. On average, the spilt of fuel delivered to the pyroprocessing area would be 60% to the precalciner and 40 % to the kiln. Some minor variations of the fuel allocation between these two locations will occur to adjust for variations in raw mix and fuel quality. The typical fuel firing rate is estimated to be about 800 MMBtu/hr. Table 2-1 lists some properties of the fuels that may be fired in the pyroprocessing area.

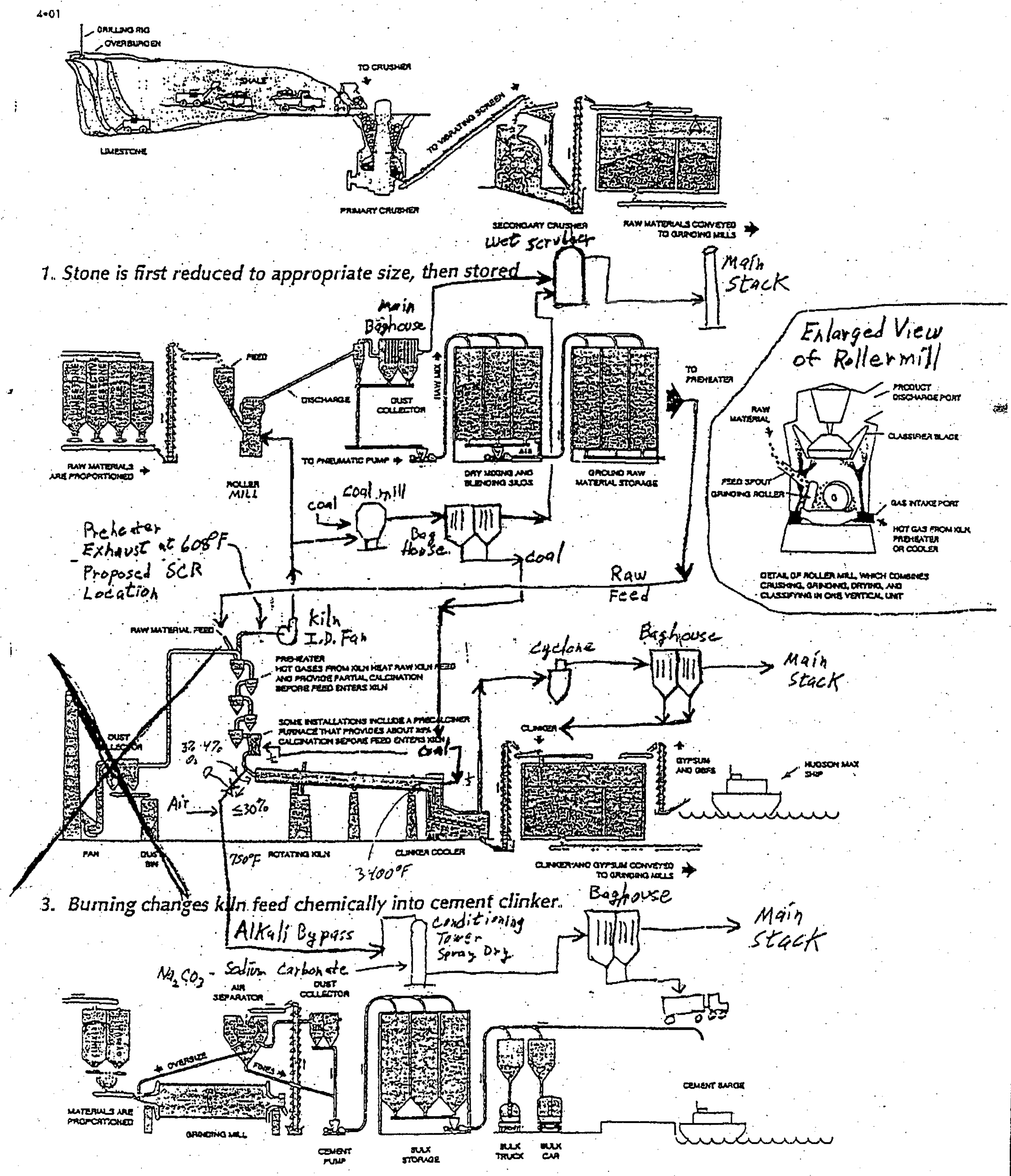
Table 2-1. Typical Fuel Characteristics

Parameter	Coal	Pet coke
HHV, Btu/lb	11,000 – 13,000	12,500 – 14,500
wt. % Moisture	1 - 8	7 - 13
wt. % Volatile Matter	25 - 35	8.5 – 16.5
wt. % ash	5 - 10	1 - 2
wt. % fix carbon	55 - 65	65 - 75
wt. % Sulfur	0.5 – 2.5	3 - 6
wt. % Chlorine	0.1 – 0.3	NA*

* NA – data are not available

Raw Materials

As discussed in this Specification, the primary raw material used in the cement manufacturing process is limestone. Some of the additional raw materials that will be added to the process include shale, iron ore, bauxite, fly ash, and coal ash.



4. Clinker with gypsum and GBFS is ground into cement and shipped

Typical Process Flow

SOURCE: PORTLAND CEMENT ASSOCIATION

2

Temperature, Pressure, and Flow Characteristics

Table 2-2 presents the expected temperature, pressure, and flow characteristics of the preheater tower exhaust gas stream. Note that these values are for bid purposes only, and actual values could differ.

Table 2-2. Anticipated Gas Characteristics in Preheater Downcomer

Parameter		Value	Notes
Gas flow rate at	Nm^3/hour (typical)	381,000	3.6% O_2, @ 0°C, 5.8 % H_2O,1 atm
SCR inlet	Nm^3/hour (max)	419,000	5.6% O_2 @ 0°C, 5.3% H_2O, 1 atm
	m^3/hour (typical)	828,000	3.6 %O_2 @ 320 °C, 5.8% H_2O
	m^3/hour (max)	910,000	5.6%, O_2 @ 320°C, 5.3% H_2O
Gas temperature at SCR inlet	Typical	320°C	SCR bypass to be used when inlet temp is < 300°C and >400°C or as specified by VENDOR
	Max Temperature Rate of Change	100 °C/minute	Maximum ramp rate will occur when preheater meal feed is lost or disrupted. Normally this will result in a kiln shutdown, but there may be several minutes of excessive temperatures before shutdown occurs.
Gas pressure	Typical	-60 mBar.	
at SCR inlet	Minimum	-80 mBar	

Gas-Phase Compositions and Ranges

Table 2-3 presents gas-phase composition data for the preheater tower exhaust gas stream Note that these values are based on design and anticipated operation, and actual values could differ

Table 2-3.. Anticipated Gas Stream Composition Preheater Downcomer

Parameter		Value	Notes
Particulate matter	Typical	60 grams/Nm^3	
loading at SCR inlet	Maximum	100 grams/Nm^3	
Particulate matter size distribution	Typical	Unknown	No data are available on the dust size distribution at this location in the process.
SO_2	Typical(daily average)	600 ppmv	@ 3.6% O_2
	Maximum(daily average)	750 ppmv	@ 3.6% O_2
SO_3	Typical(daily average)	5 ppmv	@ 3.6% O_2
	Maximum(daily average)	7 ppmv	@ 3.6% O_2
NOx	Typical (daily avg.)	600 ppmv	@ 3.6% O_2
	Maximum (daily avg.)	1400 ppmv	@ 3.6 % O_2
	Maximum Rate of change	33 ppmv/sec	Rapid variation in NOx concentration will be routine
CO	Typical(daily average)	720 ppmv	@ 3.6% O_2
	Maximum (daily average)	1500 ppmv	@ 3.6% O_2
O_2	Typical	3.6 vol. %	Even higher O_2 levels can occur during malfunction conditions.
	Maximum	~6 vol. %	
CO_2	Typical	30 vol. %	@ 3.6% O_2
H_2O	Typical	~6.0 vol. %	@ 3.6% O_2
Process Generated NH_3	Typical	20 ppmv	@ 3.6% O_2
	Maximum	30 ppmv	@ 3.6% O_2
	Minimum	10 ppmv	@ 3.6% O_2
Hydrocarbons (THC)	Typical	25 ppmv as C_3H_8	@ 3.6% O_2
	Maximum	36 ppmv as C_3H_8	@ 3.6% O_2

4

Entrained Dust Composition

Table 2-4 presents composition data for the entrained dust in the preheater tower exhaust gas stream Note that these values are based on design and anticipated operation, and actual values could differ. Note also that this entrained dust may be "sticky" under the operating conditions of the preheater tower exhaust stream See http://www robinsonfans.com/protect/cement.htm for additional details.

Table 2-4. Particulate Matter Composition

Compound		Value	Notes
CaO	Typical	26 grams/Nm^3	Value is CaO + $CaCO_3$. CaO levels should be assumed to be high.
	Maximum	45 grams/Nm^3	
K_2O	Typical	0.55 grams/Nm^3	
	Maximum	0.61 grams/Nm^3	
Na_2O	Typical	0.20 grams/Nm^3	
	Maximum	0.22 grams/Nm^3	
Cr_2O_3	Typical	0.00087 grams/Nm^3	
	Maximum	0.00130 grams/Nm^3	
PbO	Typical	0.00081 grams/Nm^3	
	Maximum	0.00110 grams/Nm^3	
As_2O_3 (gas)	Typical	0.0034 grams/Nm^3	
	Maximum	0.0047 grams/Nm^3	
SiO_2	Typical	8.4 grams/Nm^3	
	Maximum	14.1 grams/Nm^3	
Al_2O_3	Typical	2.0 grams/Nm^3	
	Maximum	3.5 grams/Nm^3	
Fe_2O_3	Typical	1.5 grams/Nm^3	
	Maximum	2.7 grams/Nm^3	
TiO_2	Typical	0.11 grams/Nm^3	
	Maximum	0.19 grams/Nm^3	
MgO	Typical	0.50 grams/Nm^3	
	Maximum	0.86 grams/Nm^3	
P_2O_5	Typical	0.06 grams/Nm^3	
	Maximum	0.11 grams/Nm^3	
V_2O_5	Typical	0.0012 grams/Nm^3	
	Maximum	0.0017 grams/Nm^3	

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CDM

One Cambridge Place. 50 Hampshire Street
Cambridge Massachusetts 02139
tel: 617 452-6000
fax: 617 452-8000

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YOUNG, SOMMER ... LLC

February 10, 2004

Mr. Hansen Flemming
Sales Manager
Haldor Topsoe
17629 El Camino Real
Houston, TX 77058

Subject: Proposed SCR System for St. Lawrence Cement

Dear Mr. Flemming:

As I explained in our telephone conversation yesterday, CDM is an environmental consulting firm providing environmental assessments of St. Lawrence Cement's proposed cement plant in Greenport, NY. One of our assignments is to assess whether or not the air pollution control (APC) systems for the proposed cement plant meet present day APC laws and regulations. Since the project is located in the Northeast Ozone Transport Region, nitrogen oxide (NOx) and volatile organic compounds (VOCs) are subject to Lowest Achievable Emission Rate (LAER) control technology. Therefore, we are most interested in the feasibility of applying selective catalytic reduction (SCR) control to the proposed cement plant.

We have reviewed St. Lawrence's SCR Bid Specification and Alstom's SCR proposal dated 9/19/03. We understand Haldor Topsoe is the preferred catalyst supplier in Alstom's proposal. There seems to be some misunderstanding of St. Lawrence's interpretation of Alstom's proposal. Also there is some question as to the practicality and reasonableness of some of the performance standards which St. Lawrence Cement required in their Bid Specification. Therefore, to clarify Haldor Topsoe's position to offer an SCR catalyst for the proposed cement plant in Greenport, could you please answer the following questions.

1. Can Haldor Topsoe guarantee that their proposed SCR catalyst for St. Lawrence Cement will meet the following performance guarantees as stated in Appendix 1? Note that we have changed the performance standards in the original Bid Specification to reflect what is typically provided in a performance guarantee by an SCR system supplier. If there are any performance guarantees which you would have to take exception to, please indicate these. Assume that the Application Description/Design Basis as stated in Section 2.0 of the Bid Specification are unchanged. I have included these data in Appendix 2 - Cement Manufacturing Plant - Process Data.

CDM

Mr. Hansen Flemming
February 10, 2004
Page 2

2. One of the problems with applying SCR to this project is the temperature of the preheater tower exhaust gas, minimum of 300°C (572° F), which is slightly lower than the desired minimum inlet temperature of 315°C (600° F) to 325°C (617° F). One of the possible solutions to this problem is to install a bypass duct around the last preheater cyclone. See attached Figure 1 showing kiln, preheater cyclones, proposed cyclone bypass duct and nominal design temperatures through the process. Assuming that the preheater tower exhaust temperature from the last preheater tower is at the minimum 572° F and its temperature needs to be raised to 617° F, only 5% of the 932° F gas stream going into the last cyclone would have to be bypassed to achieve the desired 617° F going into the SCR system. Note that similar types of economizer bypasses are commonly used on utility boiler SCR systems. Does this sound like a reasonable way to address the temperature problem? Do you see any technical flaws in it? Assuming such a cyclone bypass duct could be installed on the proposed cement plant, could Haldor Topsoe agree to providing the performance guarantees stated above?

3. Lastly, we are most interested in hearing about the SCR testing being done by Italcementi (Broni and Caluso plants). Do you have any data from these projects which you can share with us. We would like to know about: sulfur and SO2 concentrations in the limestone and preheater exhaust gas, concentrations of alkalis (Na, K) and other detrimental elements (arsenic, lead, phosphorus) in the raw feed and the preheater exhaust gas, SO_2 oxidation levels, any formation of $CaSO_4$, any plugging or fouling problems, NO_2 reduction, NH_3 slip levels, fuel used, type of catalyst, temperatures at inlet and outlet of SCR system, type of soot blowers and frequency used, dust loading to the SCR system and composition of the dust.

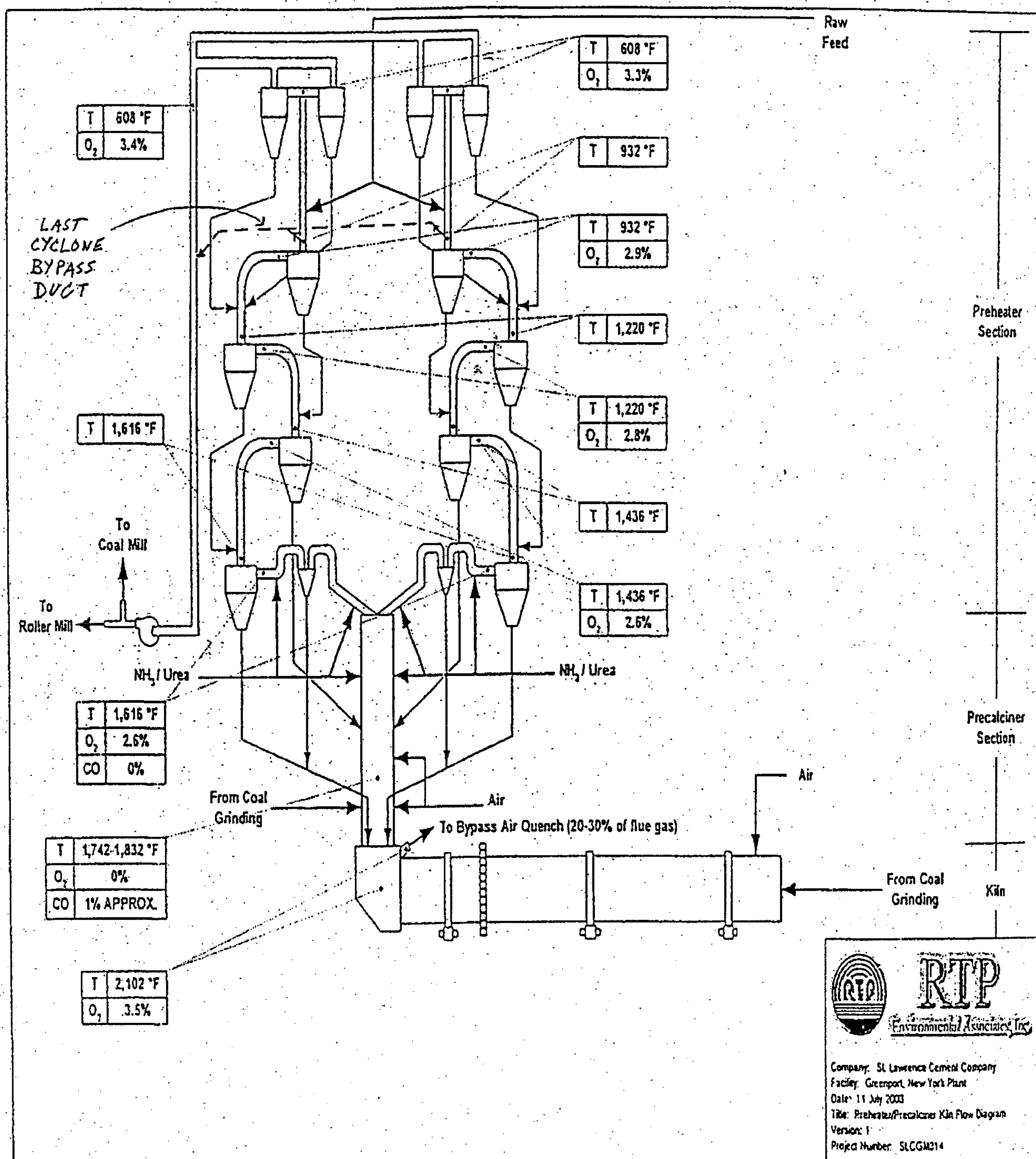
We greatly appreciate your assistance on this important project. If you have any questions or concerns, please do not hesitate to call me at 617-452-6239. If you could respond to us by February 24, 2004 that would be most appreciated. Thank you.

Very truly yours,

Frank Sapienza

Frank Sapienza
Principle Engineer
Camp Dresser & McKee Inc.

Figure 1
Schematic of Greenport Preheater/Precalciner Section Showing Nominal Temperatures



APPENDIX 1
Performance Guarantees for SCR System

1. NOx Reduction Efficiency

The SCR system shall achieve a minimum of 85% NOx reduction efficiency when the proposed cement manufacturing plant (specifically the kiln, precalciner and preheater) is operating at stable, continuous conditions. Stable continuous conditions are defined as operation of the plant such that the preheater tower exit gas flow rate, temperature and composition are as defined below (i.e. between the following minimum and maximum valves):

	Minimum	Maximum
Flow rate in actual m^3/hr	600,000	950,000
Temperature in degrees C.	300.	400.

All other preheater tower exit gas characteristics and composition shall be between the limits indicated in Table 2-2 and 2-3 (as reissued on 9/5/04) and Table 2-4 of the Greenport Project SCR Bid Specification. The above NOx reduction efficiency shall be maintained for the life of the catalyst. The life of the catalyst is defined in Item 6 below.

2. NH_3 Slip

The NH3 slip from the SCR reactor shall not exceed 2 ppmvd at 3% oxygen when the cement manufacturing plant is operating at stable, continuous conditions. The ammonia slip emission limit must be maintained for the life of the catalyst which is defined in Item 6 below.

3. SO_2 Oxidation

The fraction of SO_2 that is oxidized to form SO_3 in the SCR reactor shall not exceed 1.0 mole % while the cement manufacturing plant is operating at stable, continuous conditions. The SO_2 oxidation limit must be maintained for the life of the catalyst which is defined in Item 6 below.

CDM

4. **Gas-Side Pressure Loss Requirements**

The flange-to-flange gas side pressure loss across the SCR system shall not exceed 6 inches water column when the cement manufacturing plant is operating at stable, continuous conditions. The gas side pressure loss must be maintained for the life of the catalyst which is defined in Item 6 below.

5. **Turndown Requirements**

The SCR system must be capable of maintaining all performance requirements listed in this Appendix when the preheater tower exit gas has a flow, temperature and characteristics within the ranges defined in Item 1 above.

6. **Catalyst Life**

The average catalyst life shall be a minimum of 24,000 hours of operating time. Operating time includes only that time during which NH_3 is injected into the preheater tower exhaust gas upstream of the SCR reactor. Average catalyst life refers to the average length of time catalyst is installed in the reactor before it is removed and replaced.

7. **SCR Availability Requirement**

The SCR system shall be available at least 98%of the time that the cement manufacturing plant is operated at stable, continuous conditions, and also provided that the SCR system is maintained and operated in accordance with the procedures and instructions stated in the SCR supplier's Operations and Maintenance Manuals.

8. **Failure to Meet Performance Guarantees**

If the SCR system fails to meet the NO_x reduction efficiency (85%) as stated in Item 1 or the NH_3 slip limit stated in Item 2, then the SCR system supplier shall correct the failure by repair, modification or replacement of the SCR equipment, whole or in part. If, after a reasonable period in which the SCR supplier attempts to correct the deficiencies, the SCR system still fails to meet the above NO_x reduction and NH_3 slip guarantees, then the SCR supplier shall pay the Purchaser liquidated damages. The amount of liquidated damages shall be determined by the supplier and Purchaser and shall be based on the cost to the Purchaser of excess NO_x emissions released to the atmosphere.

Test method procedures for determining NO_X, NH_3, SO_2 and SO_3 concentrations shall be as stated in the Greenport Project SCR Bid Specification.

APPENDIX 2

CEMENT MANUFACTURING PLANT - PROCESS DATA

Fuel Type and Composition

The kiln pyroprocessing system will be fired primarily with coal but up to 20 % of total fuel may be chemical petroleum coke. No. 2 oil and natural gas will be used for kiln startup. On average, the spilt of fuel delivered to the pyroprocessing area would be 60% to the precalciner and 40 % to the kiln. Some minor variations of the fuel allocation between these two locations will occur to adjust for variations in raw mix and fuel quality. The typical fuel firing rate is estimated to be about 800 MMBtu/hr. Table 2-1 lists some properties of the fuels that may be fired in the pyroprocessing area.

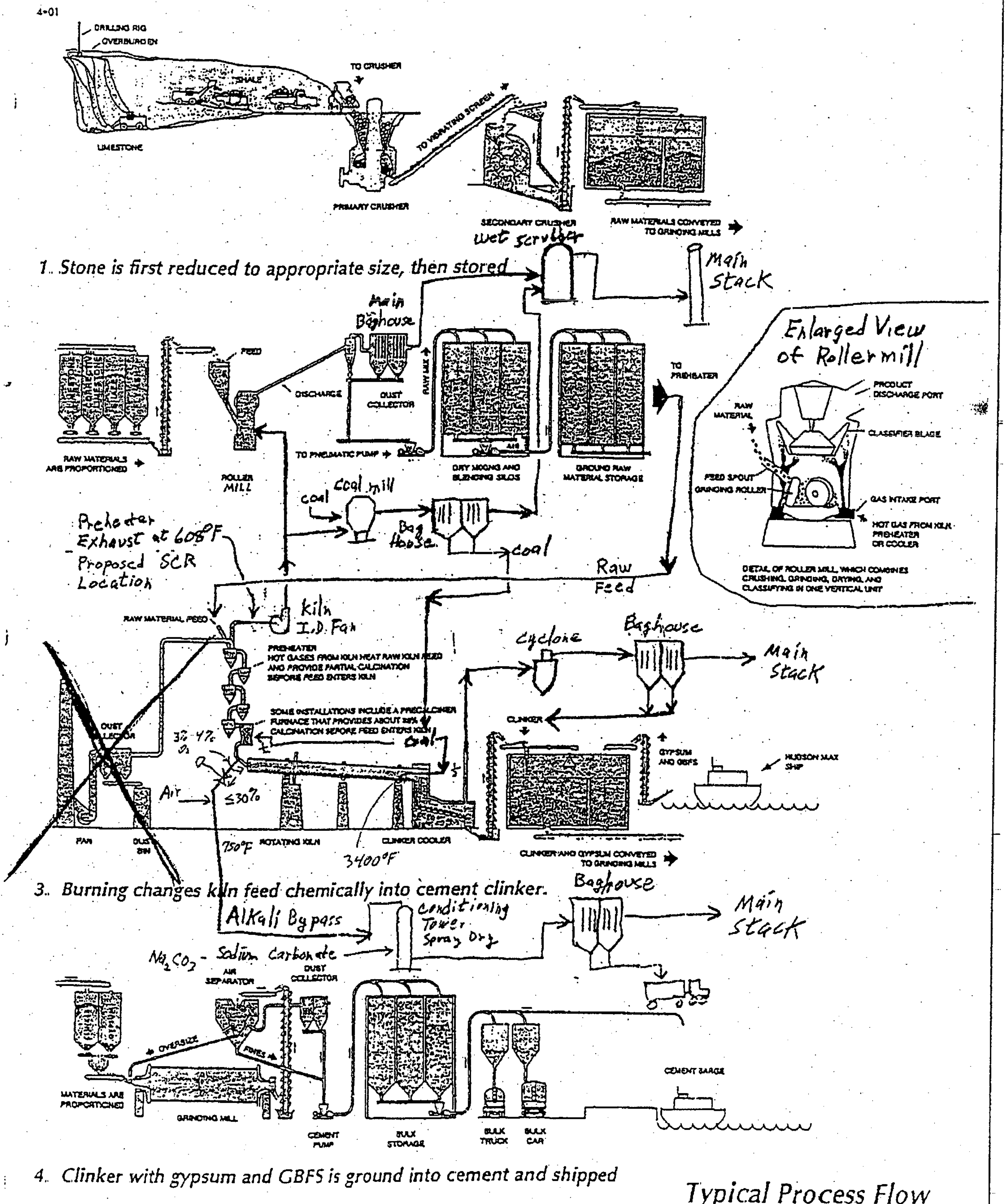
Table 2-1. Typical Fuel Characteristics

Parameter	Coal	Pet coke
HHV, Btu/lb	11,000 – 13,000	12,500 – 14,500
wt. % Moisture	1 - 8	7 - 13
wt. % Volatile Matter	25 - 35	8.5 – 16.5
wt. % ash	5 - 10	1 - 2
wt. % fix carbon	55 - 65	65 - 75
wt. % Sulfur	0.5 – 2.5	3 - 6
wt. % Chlorine	0.1 – 0.3	NA*

* NA – data are not available

Raw Materials

As discussed in this Specification, the primary raw material used in the cement manufacturing process is limestone Some of the additional raw materials that will be added to the process include shale, iron ore, bauxite, fly ash, and coal ash.



Typical Process Flow

SOURCE: PORTLAND CEMENT ASSOCIATION

2

Temperature, Pressure, and Flow Characteristics

Table 2-2 presents the expected temperature, pressure, and flow characteristics of the preheater tower exhaust gas stream. Note that these values are for bid purposes only, and actual values could differ.

Table 2-2. Anticipated Gas Characteristics in Preheater Downcomer

Parameter		Value	Notes
Gas flow rate at	Nm^3/hour (typical)	381,000	3.6% O_2, @ 0°C, 5.8 % H_2O,1 atm
SCR inlet	Nm^3/hour (max)	419,000	5.6% O_2 @ 0°C, 5.3% H_2O, 1 atm
	m^3/hour (typical)	828,000	3.6 %O_2 @ 320 °C, 5.8% H_2O
	m^3/hour (max)	910,000	5.6%, O_2 @ 320°C, 5.3% H_2O
Gas temperature at SCR inlet	Typical	320°C	SCR bypass to be used when inlet temp is < 300°C and >400°C or as specified by VENDOR
	Max Temperature Rate of Change	100 °C/minute	Maximum ramp rate will occur when preheater meal feed is lost or disrupted. Normally this will result in a kiln shutdown, but there may be several minutes of excessive temperatures before shutdown occurs.
Gas pressure at SCR inlet	Typical	-60 mBar.	
	Minimum	-80 mBar	

3

Gas-Phase Compositions and Ranges

Table 2-3 presents gas-phase composition data for the preheater tower exhaust gas stream. Note that these values are based on design and anticipated operation, and actual values could differ.

Table 2-3.. Anticipated Gas Stream Composition Preheater Downcomer

Parameter		Value	Notes
Particulate matter	Typical	60 grams/Nm^3	
loading at SCR inlet	Maximum	100 grams/Nm^3	
Particulate matter size distribution	Typical	Unknown	No data are available on the dust size distribution at this location in the process.
SO_2	Typical(daily average)	600 ppmv	@ 3.6% O_2
	Maximum(daily average)	750 ppmv	@ 3.6% O_2
SO_3	Typical(daily average)	5 ppmv	@ 3.6% O_2
	Maximum(daily average)	7 ppmv	@ 3.6% O_2
NOx	Typical (daily avg.)	600 ppmv	@ 3.6% O_2
	Maximum (daily avg.)	1400 ppmv	@ 3.6 % O_2
	Maximum Rate of change	33 ppmv/sec	Rapid variation in NOx concentration will be routine
CO	Typical(daily average)	720 ppmv	@ 3.6% O_2
	Maximum (daily average)	1500 ppmv	@ 3.6% O_2
O_2	Typical	3.6 vol. %	Even higher O_2 levels can occur during malfunction conditions.
	Maximum	~6 vol. %	
CO_2	Typical	30 vol. %	@ 3.6% O_2
H_2O	Typical	~6.0 vol. %	@ 3.6% O_2
Process Generated NH_3	Typical	20 ppmv	@ 3.6% O_2
	Maximum	30 ppmv	@ 3.6% O_2
	Minimum	10 ppmv	@ 3.6% O_2
Hydrocarbons (THC)	Typical	25 ppmv as C_3H_8	@ 3.6% O_2
	Maximum	36 ppmv as C_3H_8	@ 3.6% O_2

4

Entrained Dust Composition

Table 2-4 presents composition data for the entrained dust in the preheater tower exhaust gas stream. Note that these values are based on design and anticipated operation, and actual values could differ. Note also that this entrained dust may be "sticky" under the operating conditions of the preheater tower exhaust stream. See http://www.robinsonfans.com/protect/cement.htm for additional details.

Table 2-4. Particulate Matter Composition

Compound		Value	Notes
CaO	Typical	26 grams/Nm^3	Value is $CaO + CaCO_3$ CaO levels should be assumed to be high.
	Maximum	45 grams/Nm^3	
K_2O	Typical	0.55 grams/Nm^3	
	Maximum	0.61 grams/Nm^3	
Na_2O	Typical	0.20 grams/Nm^3	
	Maximum	0.22 grams/Nm^3	
Cr_2O_3	Typical	0.00087 grams/Nm^3	
	Maximum	0.00130 grams/Nm^3	
PbO	Typical	0.00081 grams/Nm^3	
	Maximum	0.00110 grams/Nm^3	
As_2O_3 (gas)	Typical	0.0034 grams/Nm^3	
	Maximum	0.0047 grams/Nm^3	
SiO_2	Typical	8.4 grams/Nm^3	
	Maximum	14.1 grams/Nm^3	
Al_2O_3	Typical	2.0 grams/Nm^3	
	Maximum	3.5 grams/Nm^3	
Fe_2O_3	Typical	1.5 grams/Nm^3	
	Maximum	2.7 grams/Nm^3	
TiO_2	Typical	0.11 grams/Nm^3	
	Maximum	0.19 grams/Nm^3	
MgO	Typical	0.50 grams/Nm^3	
	Maximum	0.86 grams/Nm^3	
P_2O_5	Typical	0.06 grams/Nm^3	
	Maximum	0.11 grams/Nm^3	
V_2O_5	Typical	0.0012 grams/Nm^3	
	Maximum	0.0017 grams/Nm^3	

5

February 18, 2004

Mr. Scott Rutherford
Cormetech, Inc.
5000 International Drive
Durham, NC 27712

Subject: SCR System for St. Lawrence Cement

Dear Mr. Rutherford:

As I explained in our telephone conversations, CDM is an environmental consulting firm providing environmental assessments of St. Lawrence Cement's proposed cement plant in Greenport, NY. One of our assignments is to assess whether or not the air pollution control (APC) systems for the proposed cement plant meet present day APC laws and regulations. Since the project is located in the Northeast Ozone Transport Region, nitrogen oxide (NOx) and volatile organic compounds (VOCs) are subject to Lowest Achievable Emission Rate (LAER) control technology. Therefore, we are most interested in the feasibility of applying selective catalytic reduction (SCR) control to the proposed cement plant.

We have developed a list of SCR system performance guarantees which are contained in Appendix 1. Appendix 2 contains process data on the proposed cement plant in Greenport, NY. To assist us in evaluating the suitability of applying SCR technology to the proposed cement plant, could you please answer the following questions.

1. Can Cormetech guarantee that your SCR system if installed on the proposed St. Lawrence Cement plant in Greenport, NY will meet the performance guarantees as stated in Appendix 1? If there are any performance guarantees which you would have to take exception to, please indicate these. Process data on the proposed cement plant is included in Appendix 2, Cement Manufacturing Plant - Process Data.

2. One of the problems with applying SCR to this project is the temperature of the preheater tower exhaust gas, minimum of 300°C (572° F), which is slightly lower than the desired minimum inlet temperature of 315°C (600° F) to 325°C (617° F). One of the possible solutions to this problem is to install a bypass duct around the last preheater cyclone. See attached Figure 1 showing kiln, preheater cyclones, proposed cyclone bypass duct and nominal design temperatures through the process. Assuming that the preheater tower exhaust temperature from the last preheater tower is at the minimum

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572° F and its temperature needs to be raised to 617° F, only 5% of the 932° F gas stream going into the last cyclone would have to be bypassed to achieve the desired 617° F going into the SCR system. Note that similar types of economizer bypasses are commonly used on utility boiler SCR systems. Does this sound like a reasonable way to address the temperature problem? Do you see any technical flaws in it? Assuming such a cyclone bypass duct could be installed on the proposed cement plant, could Cormetech agree to providing the performance guarantees stated above?

3. Lastly, we are most interested in hearing about the SCR testing and experience at other plants, particularly those firing high dust, high sulfur fuels such as Power River Basin (PRB) coal. I have found some interesting articles on PRB coal SCR systems on your website. Are there any recent data from these plants which you can share with us. We would like to know about: sulfur and SO2 concentrations in the limestone and preheater exhaust gas, concentrations of alkalis (Na, K) and other detrimental elements (arsenic, lead, phosphorus) in the raw feed and in the particulate matter at the SCR inlet, SO_2 oxidation levels, any formation of $CaSO_4$, any plugging or fouling problems, NO_2 reduction, NH_3 slip levels, type of catalyst, temperatures at inlet and outlet of SCR system, type of soot blowers and frequency used, dust loading to the SCR system, composition of the dust and measurements of catalyst deactivation or expected life.

We greatly appreciate your assistance on this important project. If you have any questions or concerns, please do not hesitate to call me at 617-452-6239. If you could respond to us by March 3, 2004 that would be most appreciated. Thank you.

Very truly yours,

Frank Sapienza
Principle Engineer
Camp Dresser & McKee Inc.

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APPENDIX 1
Performance Guarantees for SCR System

1. NOx Reduction Efficiency

The SCR system shall achieve a minimum of 85% NOx reduction efficiency when the proposed cement manufacturing plant (specifically the kiln, precalciner and preheater) is operating at stable, continuous conditions. Stable continuous conditions are defined as operation of the plant such that the preheater tower exit gas flow rate, temperature and composition are as defined below (i.e. between the following minimum and maximum valves):

	Minimum	Maximum
Flow rate in actual m^3/hr	600,000	950,000
Temperature in degrees C.	300	400

All other preheater tower exit gas characteristics and composition shall be between the limits indicated in Table 2-2, 2-3 and 2-4 of Appendix 2. The above NOx reduction efficiency shall be maintained for the life of the catalyst. The life of the catalyst is defined in Item 6 below.

2. NH_3 Slip

The NH3 slip from the SCR reactor shall not exceed 2 ppmvd at 3% oxygen when the cement manufacturing plant is operating at stable, continuous conditions. The ammonia slip emission limit must be maintained for the life of the catalyst which is defined in Item 6 below.

3. SO_2 Oxidation

The fraction of SO_2 that is oxidized to form SO_3 in the SCR reactor shall not exceed 1.0 mole % while the cement manufacturing plant is operating at stable, continuous conditions. The SO_2 oxidation limit must be maintained for the life of the catalyst which is defined in Item 6 below.

4. Gas-Side Pressure Loss Requirements

The flange-to-flange gas side pressure loss across the SCR system shall not exceed 6 inches water column when the cement manufacturing plant is operating at stable, continuous conditions. The gas side pressure loss must be maintained for the life of the catalyst which is defined in Item 6 below.

5. **Turndown Requirements**

The SCR system must be capable of maintaining all performance requirements listed in this Appendix when the preheater tower exit gas has a flow, temperature and characteristics within the ranges defined in Item 1 above.

6. **Catalyst Life**

The average catalyst life shall be a minimum of 24,000 hours of operating time. Operating time includes only that time during which NH_3 is injected into the preheater tower exhaust gas upstream of the SCR reactor. Average catalyst life refers to the average length of time catalyst is installed in the reactor before it is removed and replaced.

7. **SCR Availability Requirement**

The SCR system shall be available at least 98%of the time that the cement manufacturing plant is operated at stable, continuous conditions, and also provided that the SCR system is maintained and operated in accordance with the procedures and instructions stated in the SCR supplier's Operations and Maintenance Manuals.

8. **Failure to Meet Performance Guarantees**

If the SCR system fails to meet the NO_x reduction efficiency (85%) as stated in Item 1 or the NH_3 slip limit stated in Item 2, then the SCR system supplier shall correct the failure by repair, modification or replacement of the SCR equipment, whole or in part. If, after a reasonable period in which the SCR supplier attempts to correct the deficiencies, the SCR system still fails to meet the above NO_x reduction and NH_3 slip guarantees, then the SCR supplier shall pay the Purchaser liquidated damages. The amount of liquidated damages shall be determined by the supplier and Purchaser and shall be based on the cost to the Purchaser of excess NO_x emissions released to the atmosphere.

Test method procedures for determining NO_x, NH_3, SO_2 and SO_3 concentrations shall be US EPA Test Methods (40 CFR 60 Appendix A).

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March 18, 2004

Mr. Jack Wagner
Argillon Inc.
1345 Ridgeland Parkway
Suite 116
Alpharetta, Georgia 30004

Subject: Proposed SCR System for St. Lawrence Cement

Dear Mr. Wagner:

As I explained in our telephone conversation, CDM is an environmental consulting firm providing environmental assessments of St. Lawrence Cement's proposed cement plant in Greenport, NY. One of our assignments is to assess whether or not the air pollution control (APC) systems for the proposed cement plant meet present day APC laws and regulations. Since the project is located in the Northeast Ozone Transport Region, nitrogen oxide (NOx) and volatile organic compounds (VOCs) are subject to Lowest Achievable Emission Rate (LAER) control technology. Therefore, we are most interested in the feasibility of applying selective catalytic reduction (SCR) control to the proposed cement plant.

We have developed a list of SCR system performance guarantees which are contained in Appendix 1. Appendix 2 contains process data on the proposed cement plant in Greenport, NY. To assist us in evaluating the suitability of applying SCR technology to the proposed cement plant, could you please answer the following questions.

1. Can Argillon Inc. guarantee that their SCR system if installed on the proposed St. Lawrence Cement plant in Greenport, NY will meet the performance guarantees stated in Appendix 1? If there are any performance guarantees which you would have to take exception to, please indicate these. Process data on the proposed cement plant is included in Appendix 2, Cement Manufacturing Plant – Process Data.

2. One of the problems with applying SCR to this project is the temperature of the preheater tower exhaust gas, minimum of 300°C (572° F), which is slightly lower than the desired minimum inlet temperature of 315°C (600° F) to 325°C (617° F). One of the possible solutions to this problem is to install a bypass duct around the last preheater cyclone. See attached Figure 1 showing kiln, preheater cyclones, proposed cyclone bypass duct and nominal design temperatures through the process. Assuming that the

Document code

preheater tower exhaust temperature from the last preheater tower is at the minimum 572° F and its temperature needs to be raised to 617° F, only 5% of the 932° F gas stream going into the last cyclone would have to be bypassed to achieve the desired 617° F going into the SCR system. Note that similar types of economizer bypasses are commonly used on utility boiler SCR systems. Does this sound like a reasonable way to address the temperature problem? Do you see any technical flaws in it? Assuming such a cyclone bypass duct could be installed on the proposed cement plant, could Argillon Inc. agree to providing the performance guarantees stated above?

3. Lastly, we are most interested in hearing about SCR testing and experience at other plants, particularly those firing high dust, high calcium fuels such as Powder River Basin (PRB) coal. I found the following article through a web search, "*SCR Catalyst Design Issues and Operating Experience: Coals with High Arsenic Concentrations and Coals from Powder River Basin*" which was authored by Siemens technical experts. Is there any more recent experience or data available on the SCR systems at PRB coal boilers? Has any more work been done as part of the PRB Test Program which is mentioned in the article?

We greatly appreciate your assistance on this important project. If you have any questions or concerns, please do not hesitate to call me at 617-452-6239. I hate to rush you, but unfortunately we need a response by March 23, 2004. If only a partial response is possible that would be appreciated. Thank you.

Very truly yours,

Frank Sapienza
Principle Engineer
Camp Dresser & McKee Inc.

Document Code

APPENDIX 1
Performance Guarantees for SCR System

1. NOx Reduction Efficiency

The SCR system shall achieve a minimum of 85% NOx reduction efficiency when the proposed cement manufacturing plant (specifically the kiln, precalciner and preheater) is operating at stable, continuous conditions. Stable continuous conditions are defined as operation of the plant such that the preheater tower exit gas flow rate, temperature and composition are as defined below (i.e. between the following minimum and maximum valves):

	Minimum	Maximum
Flow rate in actual m^3/hr	600,000	950,000
Temperature in degrees C.	300.	400.

All other preheater tower exit gas characteristics and composition shall be between the limits indicated in Table 2-2, 2-3 and 2-4 of Appendix 2. The above NOx reduction efficiency shall be maintained for the life of the catalyst. The life of the catalyst is defined in Item 6 below.

2. NH_3 Slip

The NH3 slip from the SCR reactor shall not exceed 2 ppmvd at 3% oxygen when the cement manufacturing plant is operating at stable, continuous conditions. The ammonia slip emission limit must be maintained for the life of the catalyst which is defined in Item 6 below.

3. SO_2 Oxidation

The fraction of SO_2 that is oxidized to form SO_3 in the SCR reactor shall not exceed 1.0 mole % while the cement manufacturing plant is operating at stable, continuous conditions. The SO_2 oxidation limit must be maintained for the life of the catalyst which is defined in Item 6 below.

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4. Gas-Side Pressure Loss Requirements

The flange-to-flange gas side pressure loss across the SCR system shall not exceed 6 inches water column when the cement manufacturing plant is operating at stable, continuous conditions. The gas side pressure loss must be maintained for the life of the catalyst which is defined in Item 6 below.

5. Turndown Requirements

The SCR system must be capable of maintaining all performance requirements listed in this Appendix when the preheater tower exit gas has a flow, temperature and characteristics within the ranges defined in Item 1 above.

6. Catalyst Life

The average catalyst life shall be a minimum of 24,000 hours of operating time. Operating time includes only that time during which NH_3 is injected into the preheater tower exhaust gas upstream of the SCR reactor. Average catalyst life refers to the average length of time catalyst is installed in the reactor before it is removed and replaced.

7. SCR Availability Requirement

The SCR system shall be available at least 98%of the time that the cement manufacturing plant is operated at stable, continuous conditions, and also provided that the SCR system is maintained and operated in accordance with the procedures and instructions stated in the SCR supplier's Operations and Maintenance Manuals.

8. Failure to Meet Performance Guarantees

If the SCR system fails to meet the NO_x reduction efficiency (85%) as stated in Item 1 or the NH_3 slip limit stated in Item 2, then the SCR system supplier shall correct the failure by repair, modification or replacement of the SCR equipment, whole or in part. If, after a reasonable period in which the SCR supplier attempts to correct the deficiencies, the SCR system still fails to meet the above NO_x reduction and NH_3 slip guarantees, then the SCR supplier shall pay the Purchaser liquidated damages. The amount of liquidated damages shall be determined by the supplier and Purchaser and shall be based on the cost to the Purchaser of excess NO_x emissions released to the atmosphere.

Test method procedures for determining NO_X, NH_3, SO_2 and SO_3 concentrations shall be US EPA Test Methods (40 CFR 60 Appendix A).

EXHIBIT
B

KWH Catalysts, Inc.

February 27, 2004

Camp Dresser & McKee Inc.
One Cambridge Place
50 Hampshire Street
Cambridge, MA 02139

Attention: Frank Sapienza
Principle Engineer

Subject: SCR System for St. Lawrence Cement
KWH Catalysts, Inc. Response to Revisions to the Specification

Dear Mr. Sapienza:

The following is response to your questions concerning the proposed CDM revisions to the St. Lawrence Cement Greenport SCR bid specification.

1. Can KWH Catalysts, Inc. guarantee that its proposed SCR system for St. Lawrence Cement will meet the performance guarantees as stated in Appendix 1?

NOx Reduction Efficiency

KWH can meet the performance guarantee of a minimum 85% NOx reduction. However, the minimum temperature to the SCR must be 315 C versus the specified 300 C to avoid salt formation. The temperature at which ammonium salts will begin to form is really not a debatable issue. With ammonia present and the concentration of SO_3 and NOx known, salts will begin to form at a temperature dependent on the moisture content of the process gas. This is well known chemistry and easily calculated.

NH_3 Slip

KWH can meet the performance guarantee requirement of not to exceed 2 ppmvd at 3% O_2.

SO_2 Oxidation

The requirement of SO_2/SO_3 conversion of less than 1% by mole is the now typical requirement in specifications for coal-fired U.S. utility boilers since potential carry-over of SO_3 downstream can result in an acid plume out the stack. This criteria should not be applied to a cement process gas stream. The SO3 generated in the process is captured by the large amount of free lime as CaO in the gas stream. SO_2 oxidation by the catalyst wil have no negative impact on the amount of SO_3 formed and subsequently captured. As an added point, there is no field test method that can measure this anyway since the SO_3 gas is totally captured by conversion to particulate calcium sulfates and sulfites as it is contacted by the free lime upstream, within, and downstream of the SCR catalyst.

Gas-Side Pressure Loss

KWH can meet the performance guarantee requirement of not to exceed 6" W.G. across the flange-to-flange SCR system.

Turndown Requirements

KWH will maintain all performance requirements listed in the Appendix with the exception of SO_2 oxidation (as explaned above) within the ranges of flow and characteristics defined in Item 1 of your letter. However the minimum temperature must be 315 C versus the specified 300 C.

Catalyst Life

Common practice for SCR catalyst is 16,000 hours and KWH would guarantee this catalyst lifetime. The Solnhofen SCR has operated successfully for over 24,000 hours. In three weeks KWH will be removing catalyst test elements from the Solnhofen reactor and conducting laboratory bench reactor tests to determine catalyst deactivation. KWH stated in its bid to St. Lawrence that it expected a 24,000 hour catalyst life. KWH would be willing to provide a 24,000 hour life guarantee but this commitment would be depend on the results of these bench reactor catalyst tests. KWH will update you on this issue when the bench reactor catalyst test results become available. A condition for the catalyst life guarantee and the following Availability guarantee is that the SCR system be equipped with a 100% bypass. This will protect the catalyst against plant upset conditions such as very low gas flow that would plug the catalyst quickly or moisture conditions at acid or water dewpoints that would form cement at the catalyst face and in the catalyst channels effectively ending the life of the catalyst. This is not an unreasonable condition as this is common practice for some pollution control equipment that are sensitive to specific plant upset conditions. For example, a bypass is commonly used for baghouses to prevent high temperature excursions from destroying the filter bags or boiler tube leaks causing permanent bag blinding.

SCR Availability

KWH can guarantee SCR system availability of 98% of the time that the cement plant is operated at stable, continuous conditions as defined in the specification for the performance guarantee criteria and provided that the SCR system is maintained and operated in accordance with the procedures and instructions stated in the KWH Operations and Maintenance Manual. Additional conditions for the availability guarantee are that KWH will have access to the SCR system during plant outages and forced shut-downs to conduct inspections and maintenace of the SCR system and that the SCR system is equipped with a 100% bypass as described previously.

Failure to Meet Performance Guarantees

KWH takes exception to the open-ended liquidated damages requirement as stated. The Industry standard for pollution control systems, be they FGD scrubbers, bag-houses, SCRs and precipitators is typically worded as follows: "The cumulative maximum liability of Vendor with respect to all claims and costs arising out of or incurred in connection with this contract or arising out of the performance or non-performance of the supplied scope of work, whether based on contract, warranty, tort, strict liability or otherwise, shall not exceed in the aggregate an amount equal to one hundred (100%) percent of the Contract Price paid to Vendor".

2. **Maintaining the Minimum Temperature**

The inclusion, as you propose, of a bypass duct around the last preheater cyclone as a method to maintain the preheater tower exhaust gas above the minimum required temperature of 315 C, appears to be a reasonable method to address the minimum temperature issue.

3. **Solnhofen Plant Data**

KWH had a very informative meeting at the Solnhofen Plant on February 25. The SCR has been operating for over 24,000 hours and maintaining the German regulation requirement of not to exceed 500 mg/m^3 of NOx. The SCR is only equipped with 3 of a possible 5 layers to meet the 500 mg limit. Provision was included in the SCR design to achieve potential future limit of 200 mg. The 500 mg requirement is being achieved with an average NOx inlet of 2500 mg.

During the KWH meeting, Mr. Gerd Sauter, Plant Manager, stated that, if CDM wishes to obtain detailed SCR performance data and process exhaust gas and particulate/raw feed data, he would be pleased to provide this information with a confidentiality agreement in place. He invited CDM to visit the plant if they wish.

As a final comment, note that SCR technology has been applied for several decades to a diverse number of applications worldwide. KWH, in particular, has successfully applied its catalyst technology to such applications as coal-fired boilers, oil and gas fired boilers, municipal waste and sewage sludge incinerators, diesel/gas cogen plants, chemical plants, refineries, glass plants, biomass incinerators, and steel sinter plants. These applications span an extreme range of process gas/dust conditions and operating conditions. SCR catalyst is a mature, proven technology that can be adapted in its design formulation and configuration (i.e. pitch, length, etc.) to a wide range of applications as has been shown with the new application on cement at Solnhofen.

Should you have questions or require additional information, please contact me.

Very truly yours,

Tom Lugar

Tom Lugar
Chief Executive Officer
KWH Catalysts, Inc.

ALSTOM

Power Environment
Environmental Control Systems

Mr. Frank Sapienza
Camp Dresser & McKee, Inc.
One Cambridge Place
50 Hampshire Street
Cambridge, MA 02139

2/23/2004

Your Ref: Your Letter Dated February 6, 2004
Our Ref: St. Lawrence Cement - Greenport SCR Project

Mr. Frank Sapienza,

We are in receipt of your letter dated February 6 wherein you offer comment to the St. Lawrence Cement project.

Although your interest in this project is understood, and your suggestions noteworthy, ALSTOM is not in a position to formally respond to questions from a party who is not contracted directly with, or an agent of, St. Lawrence Cement (SLC). Should the project proceed with SCR, questions and answers should be directed through SLC to ALSTOM, and back through the same path. As a global, full-service consulting, engineering, construction, and operations firm, we expect CDM will agree this is proper protocol leading to potential capital equipment procurement.

With regard to the Italcementi testing that had been performed, the specific details of that program are confidential in nature and cannot be divulged without the consent of Italcementi.

Thank you for contacting ALSTOM Power. If we can offer any further information or assistance, please let us know.

Sincerely,
ALSTOM Power

Noel Kuck
Product Manager

1409 Centerpoint Blvd.
Knoxville, TN (USA) 37932-1962
Tel.: 865 693-7550
Fax: 865 694-5203
www.power.alstom.com

ALSTOM Power Environment
Head Office 25 Avenue Kleber
75116 Paris (France)
Tel: +33 1 47 55 20 00
Fax: +33 1 47 55 [illegible]

Sapienza, Frank

From: Howard Franklin [howard.franklin@hal.hitachi.com]
Sent: Tuesday, March 23, 2004 8:37 AM
To: Sapienza, Frank
Subject: Re: SCR for Cement Plant

Frank,

I received the email below from Japan. It appears that your conditions are too challenging.

Regards,

Howard

Howard-san,

It is quite difficult to apply the SCR system for this cement plant because:

1) Very high dust loading (Normal 60g/Nm3, Max. 100g/Nm3). It is 3 times of our worst case experience. It is very difficult to predict the erosion and dust plugging even if sootblowers are installed.

2) CaO amount: CaO loading is 15-30 times of PRB application. So, the masking is an extremely large and unpredictable problem. We anticipate that the catalyst will deteriorate very quickly. It is not possible to evaluate the catalyst life and offer any guarantees.

The customer requires the very high performance and long life (24000 hours). It is not possible for us to economically design the SCR and offer any guarantees.

Best regards

T. Ogasahara

"Sapienza, Frank" wrote:

> Dear Mr. Franklin:It was good talking with you the other day. The attached letter explains our interest in applying SCR technology to cement manufacturing plants.If you have any questions, please call me at 617-452-6239.Thank you for your assistance.Very truly yours,Frank SapienzaPrinciple EngineerCDM Inc.

EXHIBIT C

TABLE 1
Comparison of Greenport Plant With Coal-Fired Power Plants

Flue Gas Design Parameters at Outlet of Preheater Tower	Greenport, NY	Coal Fired Power Plants With SCR Systems: Somerset, NJ High Dust. High Sulfur	Carolina P&L Low Dust Low Sulfur	Kasas City P&L High Dust, Low Sulfur, PRB Coal
Gas Flow Rate in Nm^3/hr				
- Typical	381,000	2,300,000	2,700,000	8,860,000
- Maximum	419,000			
Gas Temperature at SCR Inlet				
- Typical (°C)	320 °C	343 °C	391°C	368 °C
Dust Loading in grams/Nm				
- Typical	60	11 5	0.10 [2]	32 7
- Maximum	100			
SO_2 in ppmv				
- Typical	600	1140-3490	323-1213 [3]	420
- Maximum	750			
SO_3 in ppmv				
- Typical	5	8.6 [1]	2 4 - 8 8 [1]	3 2 [1]
- Maximum	7	26 [1]		
NOx in ppmv				
- Typical	600	340	278	135
- Maximum	1400			
CaO in PM in $grams/Nm^3$				
- Typical	26	0.48	ND [4]	7 4
- Maximum	45		0.01	9
Na_2O in PM in $grams/Nm^3$				
- Typical	0.20	0.061	ND	0.46
- Maximum	0.22		0.004	0 78
K_2O in PM as $grams/Nm^3$				
- Typical	0.55	0 16	ND	0 10
- Maximum	0 61		0.003	0.20
As_2O_3 gas in $grams/Nm^3$				
- Typical	0.0034	0.008	ND	0
- Maximum	0.0047	0 012	0 021	
P_2O_5 in PM in $grams/Nm^3$				
- Typical	0 06	0.032	ND	0 56
- Maximum	0 11		0.0006	0.78
In Commercial Operation Since		July-99	July-01	May-01
Design Parameters				
Outlet NOx in ppm		34	58.5	59.2
NOx removal efficiency		90%	79%	55 60%
NH_3 Slip		3 ppm	2 ppm	2 ppm
SO_2 Oxidation		< 0.75%	< 1.0 %	< 0 75 %
Catalyst Life		24,000 hrs	24,000 hrs	24,000 hrs
Achieving all Design Parameters to Date?		Yes	Yes	Yes

Notes:

[1] Estimate based on 0 75 % SO_2 oxidation

[2] SCR is installed downstream of ESP

[3] Calculated value based on sulfur in fuel (1 5%)

[4] ND abbreviation for No Data

EXHIBIT
D

FGD and DeNOx NEWSLETTER

January 2004
No. 309

Low NO_x Levels (0.04 lbs/MMBtu) Now Being Obtained

Nineteen coal-fired power plants in the United States achieved NO_x emission levels of 0.06 lbs/MMBtu or lower in the third quarter 2003. Six plants achieved 0.04 lbs/MMBtu. Seven plants achieved 0.05 lbs/MMBtu and six plants averaged 0.06 lbs/MMBtu. See Figure 4 for the lowest emitters. All were retrofit with SCR.

FIGURE 4 – LOWEST NO_x EMITTING POWER PLANTS – U.S.
3RD QUARTER 2003

Utility Name	Plant Name	Unit No.	NO_x lbs/MMBtu
PP&L Inc.	Montour	2	0.04
Reliant Energy	Keystone	1	0.04
Reliant Energy	W A Parish	WAP6	0.04
PP&L Inc.	Montour	1	0.04
Reliant Energy	Keystone	2	0.04
Consumers Energy Co.	Dan E Karn	2	0.04
Reliant Energy	Cheswick	1	0.05
Reliant Energy	W A Parish	WAP5	0.05
Georgia Power Co.	Wansley (6052)	2	0.05
Georgia Power Co.	Wansley (6052)	1	0.05
Georgia Power Co.	Bowen	1BLR	0.05
Georgia Power Co.	Bowen	4BLR	0.05
Georgia Power Co.	Hammond	4	0.05
Georgia Power Co.	Bowen	2BLR	0.06
Georgia Power Co.	Bowen	3BLR	0.06
American Electric Power	Mountaineer (1301)	1	0.06
Cinergy	East Bend	2	0.06
Alabama Power Co.	James H Miller Jr.	4	0.06
Alabama Power Co.	James H Miller Jr.	3	0.06

Third quarter data 2003 for all plants is posted in McIlvaine's Utility Environmental Upgrade Tracking System. Tables with both lowest and highest emitters are also displayed. The top eight emitters are shown in Figure 5.

FIGURE 5 – HIGHEST NO_x EMITTING POWER PLANTS – U.S.
3RD QUARTER 2003

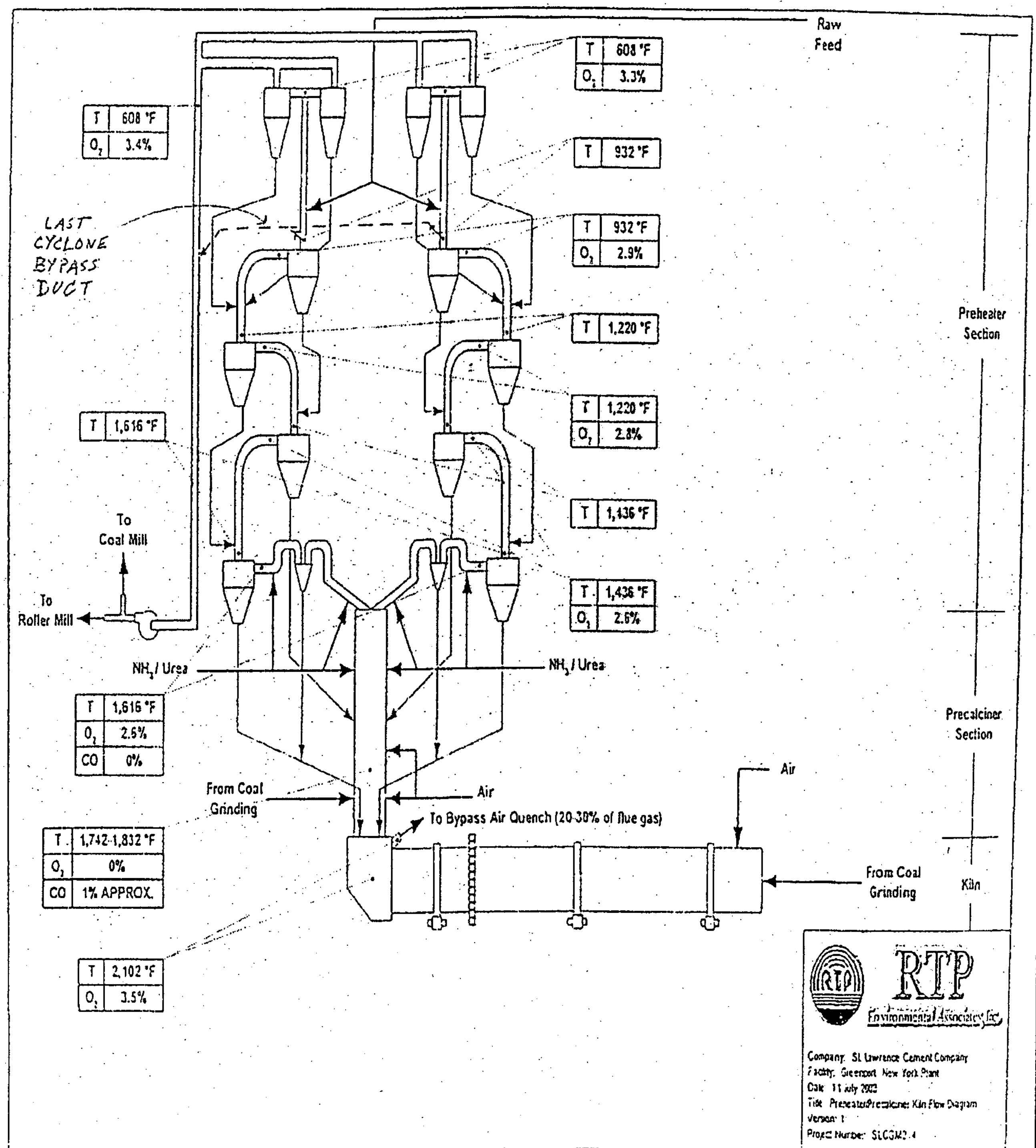
Utility Name	Plant Name	Unit No.	NO_x lbs/MMBtu
Associated Electric Coop.	New Madrid	2	1.21
Tampa Electric Co.	F J Gannon	GB03	1.16
Kansas City Power & Light Co.	La Cygne	1	1.00
Xcel Energy	Riverside (1927)	8	0.97
Allegheny Energy Supply Co.	Willow Island Power	2	0.97
Mid American	George Neal North	1	0.96

Cinergy	Walter C Beckjord	3	0.96
Associated Electric Coop.	Thomas Hill	MB1	0.94

Back to FGD and DeNOx Newsletter No 309 Table of Contents

EXHIBIT
E

Figure 1
Schematic of Greenport Preheater/Precalciner Section Showing Nominal Temperatures



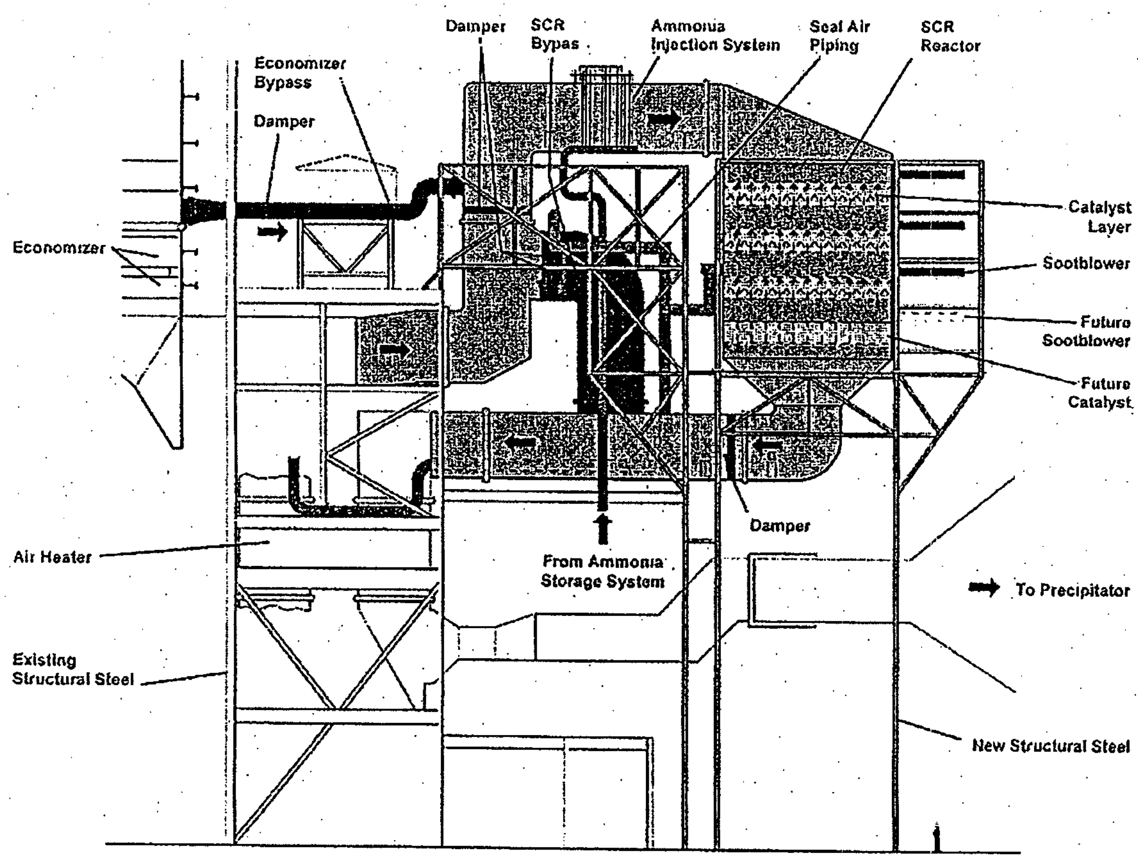


Figure Sectional View of SCR System With Economizer Bypass Duct - AES Owned 675 MW Power Plant in Somerset, NY

EXHIBIT
F

Figure

Pre-SCR NO_x Levels (December 1995)

Data from German 700 MW Power Plant